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# Virginia Medical Monthly

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Vol. 49, No. 10
WHOLE No. 847

RICHMOND, VA., JANUARY, 1923

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## Original Communications

### FOCAL INFECTION IN CHRONIC AND RECURRING DISEASE.*

By CHARLES H. MAYO, M. D., Rochester, Minnesota.

I am pleased to attend the meeting of the Medical Society of the State of Virginia, especially since this state has long served as a center for the advancement of truth throughout our country as spread by your citizens. For discussion I have chosen the subject: FOCAL INFECTION IN CHRONIC AND RECURRING DISEASE.

The spread of infectious disease from a single focus was recognized long before the specific microbe; in fact the bacterial agent is not yet recognized in several such diseases. Yet, judging by what has been accomplished in other diseases, it is but a question of time until more will be known of their etiology.

There have been isolated as yet less than 600 kinds of bacteria and it is of the greatest interest to note how work is carried on in the study of diseases of animals and of plants as well as of persons. The study of insects as carriers of disease was first an economic problem, in that cattle ticks were discovered to be the carriers of the infection of cattle fever; later the mosquito was found to be the similar carrying agent in yellow fever and malaria.

Recently our agricultural departments have shown that the microbic life causing black rust in wheat is carried through the winter on the wild barberry plant, from which it is distributed in the spring as a real focus of infective disease. Recent advances in the study of recurring and chronic diseases, so resistant to local treatment, are but the revival of appreciation of the cure of such cases by the removal of infected teeth or tonsils. Such cures were obtained by Hippocrates in 400 B. C., and by Benjamin Rush in 1800. The theory was revived by Billings twenty years ago, and supported and advanced by Rosenow.

The study of the causes of disease is most interesting. I say "causes" rather than "cause", for the bacterial germ must fall on suitable soil and have a favorable environment in order to be successful in carrying on its life work, the production of special disease. Hence, several factors must be considered in this study.

That certain drugs are elective in action has long been recognized; thus, digitalis is elective for the heart muscle, and belladonna is elective for circular muscle fibers. That bacteria in infectious disease cause a definite syndrome of disease in each person infected is accepted. To show that certain forms of bacteria are as sensitive in their selection as are certain drugs, for instance, we have but to consider those which stop in the circulation, should they pass by the transformers of energy, the ganglion cells of the anterior horns of the spinal cord, and develop changes, such as inflammation, edema, and finally varying degrees of local destruction whose effects we recognize as poliomyelitis.

Rosenow long since showed the development of certain ulcers of the stomach and duodenum to be the result of a specific localization of bacteria. He cultivated bacteria from such tissues in an active state removed from the human, injected them into the blood or peritoneum of animals and found them to be elective for similar tissue with like results. Internists have admitted such elective action in the development of ulcers, but have considered the cause of the ulcers unproved inasmuch as they usually heal later, although the internists also claim with truth, to be able to heal the majority of ulcers in the human stomach by treatment. It is true that the tendency of ulcer produced in the duodenum

*Presented by invitation before the fifty-third annual meeting of the Medical Society of Virginia in Norfolk, October 31-November 3, 1922.

of the dog is to heal, because he lacks the human equation, a focus of disease which would continue to deliver the causative bacteria to the blood from time to time, thus relighting the dormant ulcer and producing the recurrent disease, so familiar in man.

Diseases of the appendix can be produced by elective action of bacteria. The bacteria which live in the tissues of the appendix (not those normal to its lumen) are probably rarely the cause of lower abdominal disease, but should be considered as a possible agent in causing chronic diseases of the upper abdomen. The tonsils are similarly subject to their own active diseases and from small infected sealed areas may be the focus of specific bacteria which account for many widely varied local diseases. The tonsils are usually graded from size and appearance on a scale of one to four. Those designated three and four, the largest, are seen more often in young persons; the enlargement should be regarded as a reaction to local disease, but is rarely the cause of a distant lesion. The small imbedded tonsil, which does not show inflammation, but from which pus may occasionally be pressed from an open crypt, is more dangerous as a focal agent.

The alveolar abscess at the root apex of a painless, because dead tooth, is particularly dangerous, as there is seldom redness of the soft tissue to arouse suspicion, and the condition can only be revealed by the roentgen ray. Electric response is of value in testing vitality. Recently there has been a reaction against the idea of focal infection, and this has been supported by a failure to cure certain cases of chronic disease. Often those who have failed to effect a cure after extensive removal of teeth or tonsils attribute the unsatisfactory result to incorrectness of the principle, whereas it is really due to erroneous diagnosis, and their failure to locate the true focus.

Of the greatest value in research has been the work of Meisser and Bumpus who have created in the dog the condition so commonly found in man, a root abscess as a focus to maintain chronic disease. That this would ultimately be accomplished I predicted in a paper read before the Southern Surgical Association in New Orleans in 1919, in which I stated that the development of stone in the kidney is bacterial in origin and construction. This claim I had previously made, but with some misgivings, in discussing stone development. It was extremely satisfactory that the ultimate success of this research proved the truth of the statement which was based on analogy and theory.

It may be of interest to present some of the corroborative findings of Rosenow and Meisser.

During the course of numerous experiments on the localization of bacteria from various diseases, they had noted instances of extremely specific effects. Some of these observations suggested that certain chronic diseases, not generally believed to be due to infection, might be reproduced if a more or less continuous supply of bacteria could be furnished through a focus of infection, and if the elective localizing power and the property to incite certain specific reactions could be maintained; two requirements which are difficult to fulfil when bacteria are grown on artificial mediums. Acting on these ideas Rosenow and Meisser performed a series of experiments in which the pulps of teeth in dogs were removed and the pulp chambers infected with freshly isolated bacteria from various diseases.

The dogs selected were active and well nourished. Catheterized specimens of urine were normal, and roentgenograms of the kidneys, ureter, and bladder were negative at the beginning of the experiments. While devitalizing and infecting the teeth the animals were covered with a sterile sheet, and kept under ether anesthesia by the intratracheal method. A rubber dam was used to isolate the teeth to be worked on. The teeth were scrubbed and sterilized with alcohol and tincture of iodine, then cut off with sterile bone nippers midway between the incisal edge and the gum margin. The pulp canal was drilled into with sterile dental drills. The pulps were removed with sterile broaches and, after the hemorrhage had ceased, the bacteria, in dense suspension, were introduced into the pulp chambers with fine capillary glass pipettes. The canals were then sealed with impervious dental cement or amalgam. In most instances three cuspids were infected; in a few, only the two lower cuspids, and in order to determine whether the streptococci from these artificially produced foci, or bacteria from other sources might localize and produce periapical infection around teeth from which the pulp

had been removed, the fourth cuspid was devitalized, but not infected. The animals were numbered and weighed; they were kept under hygienic conditions and fed a balanced ration of dog biscuit, occasionally supplemented by meat. A supply of water, rich in lime salts, was constantly before them. Catheterized specimens of urine were examined at intervals. In from fifty-one to 120 days after the infection of the teeth, one kidney was removed from each dog. This afforded opportunity at necropsy some time later to compare the findings in that kidney with those of the remaining kidney. The study included nine cases of nephrolithiasis seen in the Clinic.

Owing to the numerous instances of beneficial effects in other diseases from removal of foci of infection and to the results obtained in the first case, the tonsils were removed and infected teeth extracted in the other patients studied. The extracted teeth and extirpated tonsils afforded an opportunity to obtain proper cultures for experimental studies.

All of the patients studied were men. Their ages ranged from thirty-three to sixty years. All were suffering from nephrolithiasis, had had typical renal attacks of from three to twenty years' duration, and the interval from the last attack to the time of our study ranged from two weeks to nine months. A history of acute infection which appeared to be a factor in the genesis of the urinary symptoms was obtained from three of the patients. Cultures were made from the urine of five of the patients. In three of these streptococci, usually with staphylococci and *Bacillus coli*, were isolated. Foci of infection were found in the teeth or tonsils of all. The number of pulpless teeth showing periapical infection varied from one to seven in each patient. Most of the infected teeth had been rendered pulpless many years prior to our study. The teeth of dogs were infected with the cultures from teeth, tonsils, and urine of one patient, from teeth and tonsils of two, from infected teeth only of four, and from tonsils only of two.

Twenty of the thirty-four dogs used in the experiment developed calculi and other lesions in the urinary tract, readily visible at necropsy. Twenty-six (75 per cent.) revealed microscopic calculi in the medulla of the kidney, and twenty, localized areas of active cellular infiltration in the medulla. Thirty (87 per cent.) revealed either calculi or localized lesions in the medulla, or both. Streptococci or diplococci were demonstrated in, or adjacent to, lesions in the kidney in sixteen dogs, all of which showed active focal lesions on microscopic examination. Positive results were obtained in eight of the nine cases. In the negative case the teeth of only one dog were infected.

The duration of the experiments yielding positive results was one month in two of the dogs, two to three months in eight, three to six months in twelve, seven to eight months in six, and ten months in two. The duration of the four negative experiments was only eleven, fifteen, thirty, and forty-five days respectively because of death from distemper.

The number of dogs whose teeth were infected with cultures from the patients varied from one to twelve in each case. In two cases only one dog was used; in three, two dogs; in two, four dogs; in one, six dogs; and in one, twelve dogs. The teeth of eighteen dogs were inoculated with cultures obtained from infected teeth, six with cultures from tonsils, and ten with cultures from the urine. Twenty of the dogs were anesthetized and fourteen died of intercurrent infection, or as the result of the induced focal infection.

The streptococcus inoculated into the pulp canals was isolated from the infected material in the root canals, or the periapical tissues of the pulpless teeth, at the end of each experiment. This was true alike of the three cuspids which were devitalized and infected at the beginning of the experiment and of the cuspid which was devitalized but not infected. In some instances secondary infection by a small gram-negative bacillus, and more rarely by a staphylococcus, had occurred. The streptococci in the teeth in which secondary infection had not occurred were especially numerous at the periphery of well-formed granulomas and where the bone was being absorbed. The findings around the teeth were similar to those following the devitalization of teeth in persons, as practiced in dentistry; the infected teeth became discolored, but remained firmly in place in the alveolar sockets; the infection caused rarefaction and absorption of bone in the periapical region without swelling, pain, or tenderness, and the cellular infiltration and distribution of the bacteria of

well-formed granulomas were also similar. The experimentally produced chronic foci, aside from being the source of the streptococcus which tended to localize electively in the urinary tract, appeared to have a general deleterious effect. Some of the dogs lost markedly in weight and became more susceptible to intercurrent infection. This was particularly true in those in which unusually large areas of infection around the teeth had developed and in which the renal calculi were large. This finding supports the interpretation by Osborne and Mendel of the infectious origin of urinary calculi observed in rats (eighty-one of 857) fed on a diet deficient in fat soluble vitamins.

It is not clear why the four dogs infected with the arthritis streptococci failed to develop arthritis. Active infection around the teeth was found in all. The streptococcus from the pulp chamber in one of the dogs inoculated four months previously had retained its affinity for the joints of rabbits on intravenous injection. It would seem, therefore, that the joints of these dogs were not affected because of high resistance of these structures to invasion by this organism during the relatively short duration of the experiment, and not because of their encapsulation, or loss of specific localizing power.

Calculi or lesions of the medulla were produced in eighty-seven per cent. of the dogs whose teeth were infected with streptococci from the urine, infected teeth, and tonsils of nine patients with typical nephrolithiasis. The duration of the experiment on the dogs in which the findings were negative was too short for stones to form. This is in sharp contrast to the findings in an equal number of dogs whose teeth were infected with strains from other sources, and to those of a larger series kept under the same conditions, but in which the teeth were not infected.

The experimentally produced calculi were similar in physical properties and chemical composition to those found in nephrolithiasis in man. The number and size of the stones were often proportional to the duration of the experiment. The other findings in the urinary tract were also similar to those occurring in patients with this disease.

If albumin, pus and blood were present in the urine, there were only small amounts; and the lesions in the medulla of the kidneys were relatively slight unless ureteral obstruction from an impacted calculus occurred, when marked ascending infection developed just as it commonly does in patients with partial obstruction of the ureter and as produced experimentally in dogs by Keith and Snowden.

The streptococcus inoculated into the teeth of dogs was isolated from the kidneys, from some of the stones, and from the teeth, at the end of the experiments, and its elective affinity for the urinary tract in rabbits was demonstrated on intravenous injection. The streptococcus from the teeth of dogs that showed active lesions in the kidneys had retained specific affinity for the kidneys of rabbits, while those from the dogs that showed no lesions or only healed lesions had lost this peculiar localizing power. The organism was found in the lesions in the substance of the kidney where crystallization and stone formation were beginning.

The results of the experiments by Rosenow and Meisser, and of the clinical study by Keyser and Braasch, and others, indicate that the factor of focal and other infections should be given thorough consideration in the management of cases of nephrolithiasis. And may not a stone-forming infection account in part for the unusual prevalence of this condition in certain localities? The demonstration of the presence of the microörganisms, precisely where precipitation and crystallization begin, suggests strongly that the mechanism of the production of stone is largely a local process and that the reactions incited produce the physicochemical conditions necessary, such as the nucleus and organic framework, for the formation of calculi. The common occurrence, however, of unusually large numbers of calcium oxalate and other crystals in the urine and in the medulla of the kidneys of the dogs that developed calculi, and the loss in weight, suggests that more general effects of infection may also play a part.

The conclusion that primary urinary calculi are often due to streptococci which have elective affinity for the urinary tract, and, it would seem, specific power to incite the conditions necessary for their formation seems justified.

## THE TUBERCULOSIS PROBLEM AND THE NEGRO.*

By H. R. M. LANDIS, M. D., Philadelphia, Pa.

Among the serious problems facing us today is that of the Negro. His social, economic, and political status has been debated pro and con for some years. Relatively little attention, however, has been devoted to his physical well being. Those interested in the broad subject of public health have viewed with considerable apprehension, however, the great prevalence in this race of the venereal diseases and the alarmingly high death rate from tuberculosis.

In the North especially there is an indifference to the subject. Many people have no realization that our Northern Cities have a Negro problem. This seems strange in view of the fact that many of our Northern cities contain an enormous number of Negroes.

The dissemination of the Negro population throughout the country has been pointed out in a recent article in the *Literary Digest* (February 25, 1922). Judge A. S. Van de Greaff, of Alabama, states that the Negroes are migrating northward and westward in large numbers. Indeed, their migration is so large and so steady that we can almost certainly look forward to the day when there will be no more "black counties" in the Gulf States.

The following statistical analysis of the Negro population is significant. There are today more Negroes in Cincinnati than in Louisville; more in the border states of the North than in the border states of the South. "On the Southern side there has been a steady decline, at first only relative, but later absolute, until in Kentucky there are now fewer Negroes than in 1860, and the black percentage of its population has become less than that for the United States as a whole; until also, as is even more significant, the last census has shown the loss of black population in all the four contiguous subjacent states,—Tennessee, Alabama, Mississippi and Louisiana. This radical change of trend—this decisive turn toward uniformity in the redistribution of the Negroes between North and South under the conditions of freedom, is thus shown to have already operated over wide areas, and it is now being extended over the whole country. From the returns of the census of 1920 we find in the Northern group 1,236,000 Negroes, showing a decimal gain of 380,000 or 44 per cent.; and in the Southern 1,917,000, showing a gain of 26,000 or less than 1½ per cent. And if we again extend the comparison back to 1860, as the beginning of the new dispensation, we have in the Northern area an increase of 1,002,000 Negroes or 448 per cent., against one of 538,000 or 60 per cent. only, in the Southern."

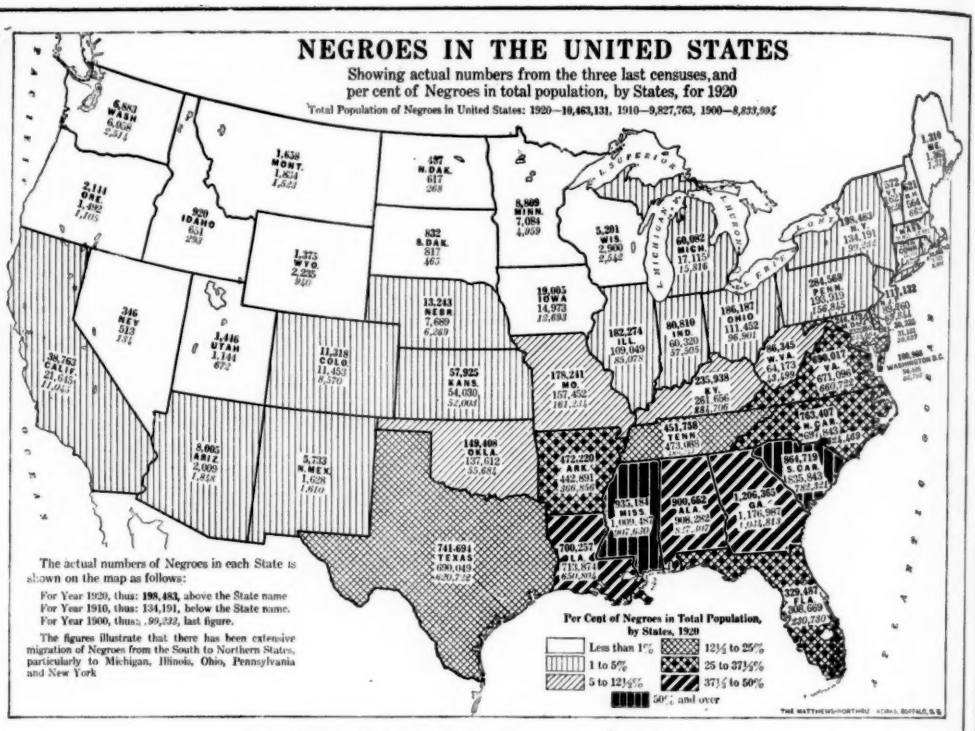
The census of 1920 shows that there were 10,463,131 Negroes in the country at large; in 1910 there were 9,827,763; and in 1900, 8,833,-944.

The appended map (Fig. 1) shows at a glance the distribution of this race. It is interesting to note that in 1896 Frederick L. Hoffman published a study entitled "Race Traits and Tendencies of the American Negro." He summarizes the chapter devoted to the various diseases to which the Negro is liable as follows: "The general conclusion is that the Negro is subject to a higher mortality at all ages, but especially so at the early age periods. This is largely the result of an inordinate mortality from constitutional and respiratory diseases. Moreover, the mortality from these diseases is on the increase among the colored, and on the decrease among the whites. *In consequence, the natural increase in the colored population will be less from decade to decade, and in the end a decrease must take place.** It is sufficient to know that in the struggle for race supremacy the black race is not holding its own; and this fact once recognized, all danger from a possible numerical supremacy of the race vanishes. *Its extreme liability to consumption alone would suffice to seal its fate as a race.** That alone would suffice to make impossible numerical supremacy in the Southern States. 'Sufferers from phthisis,' writes Mr. Haycraft, 'are prone to other diseases such as pulmonary and bronchial attacks, so that over and above the vulnerability to the one form of microbe, they are to be looked upon as unsuited not only for the battle of life but especially for parentage and for the multiplications of the condition for which they themselves suffer.'"

In spite of this pessimistic opinion, a study of the map already referred to shows the great increase in the Northern and Western States

*Read by invitation before the fifty-third annual meeting of the Medical Society of Virginia in Norfolk, October 31-November 3, 1922.

*Italics are mine.


NEGROES IN THE UNITED STATES
Showing actual numbers from the three last censuses, and per cent of Negroes in total population, by States, for 1920
Total Population of Negroes in United States: 1920—10,463,131, 1910—9,827,763, 1900—8,833,994
The actual numbers of Negroes in each State is shown on the map as follows:
For Year 1920, thus: 198,483, above the State name
For Year 1910, thus: 134,191, below the State name.
For Year 1900, thus: 99,232, last figure.
The figures illustrate that there has been extensive migration of Negroes from the South to Northern States, particularly to Michigan, Illinois, Ohio, Pennsylvania and New York
Per Cent of Negroes in Total Population, by States, 1920
Less than 1%
1 to 5%
5 to 12½%
12½ to 25%
25 to 37½%
37½ to 50%
50% and over

STATES LOSING AND GAINING NEGRO POPULATION.

Several Southern States show losses, while some Northern manufacturing States show large gains

and in spite of the migration from the Southern States, many of them show an increase in 1920 over that of 1910.

Pennsylvania leads all states other than the Southern, in the size of its Negro population. There are probably several reasons for this: (1) The large Quaker population with its anti-slavery views early led to the settlement of Negroes in the state; (2) Philadelphia, with an estimated Negro population of 150,000 is the first large city encountered on the way North; (3) the multiplicity of industrial plants in the state offers a ready field for employment.

The following extract is made from the Report of Dr. M. P. Horwood who made a survey of the tuberculosis situation in Philadelphia during the past summer:

That Philadelphia is confronted with a serious Negro problem from the standpoint of tuberculosis and the general public health is evident from the following table:

SHOWING THE COMPOSITION OF THE POPULATION OF SEVEN LARGE CITIES IN THE UNITED STATES IN 1920, WITH PARTICULAR REFERENCE TO THE NEGRO COMPONENT.

| CITY | TOTAL POPULATION | NEGROES | PER CENT. NEGROES |
|---|---|---|---|
| Philadelphia | 1,823,779 | 134,229 | 7.4 |
| New York City | 5,620,048 | 152,467 | 2.7 |
| Chicago | 2,701,705 | 109,458 | 4.1 |
| Detroit | 993,678 | 40,838 | 4.1 |
| Cleveland | 796,841 | 34,451 | 4.3 |
| Boston | 748,060 | 16,350 | 2.2 |
| Baltimore | 753,826 | 108,322 | 14.8 |
| U. S. | 105,710,620 | 10,463,131 | 9.9 |

An analysis of the 1920 Federal Census figures for the population of seven of the largest cities in the United States shows that in only one other city, namely New York, is the Negro population greater than that of Philadelphia. The number of Negroes in Philadelphia would in themselves make a large city. When the percentage of Negroes to the total population is considered, however, it is found that the concentration of Negroes in Philadelphia is 2.7 times that of New York, so that in reality the Negro problem is much more acute in

Philadelphia. The Negro population of Philadelphia is greater than that in any of the other cities considered in this study including Baltimore, which is generally known as having a large colored population. Of the seven cities whose statistics were analyzed Baltimore alone had a higher concentration of Negroes.

It is also interesting to note that the concentration of Negroes in Philadelphia is almost as great as that found in the entire country. It is indeed unusual to find a northern city with such a distinctly Negro problem. The number of Negroes in Philadelphia was largely increased during the war by migration from the South, in order to fill the numerous vacancies in industry which occurred at that time. That the prevalence of a large Negro population in Philadelphia has materially increased the tuberculosis death rate will be demonstrated more specifically in the analysis of the mortality rates from tuberculosis by color, and by wards. It will be observed that the death rate from tuberculosis among Negroes in Philadelphia is considerably higher than that among the whites, and that most of the wards having a large concentration of Negroes, also show highly mortality rates from tuberculosis.

The same state of affairs is shown in New York City with an estimated Negro population of 168,000.

In 1910 the mortality rate per 100,000 inhabitants was 202 among the white and 617 in the colored population. Both rates, of course, have declined markedly since that time—in fact, have been reduced 52 per cent., or more than one-half—being, respectively in 1921, 97 among the white and 299 among the colored.

It is interesting to note that the decline of 52 per cent. since 1910 in the tuberculosis death rate has been the same for both the colored and the white populations. This well illustrates how important are general conditions—either economic, sanitary or the availability of food supplies—in effecting the development or the reduction of tuberculosis among all classes of citizens. The equal sanitary supervision of all classes of tuberculosis by public health authorities, and the general educational measures, have produced a rate of improvement among the colored equal to that among the remainder of the population, though naturally starting from and remaining at different levels. (*Bulletin of the New York Tuberculosis Association*, Sept. 1922, Vol. III., No. 4, p. 11.)

As has already been stated, the Negro problem socially, economically, and from the viewpoint of public health, has ceased to be a matter of interest to a limited portion of the country; it has, and is, yearly becoming more so, a national problem.

So far as public health measures are concerned, they must be inefficient if the health problems of this race are disregarded.

Those imbued with bitter racial antagonism are equally concerned with those who have a sincere desire to elevate these people. Two outstanding facts must be considered: (1) That in the city of Philadelphia for the year 1921 the death rate from tuberculosis among the Negro population was 299 per 100,000 as against 99.5 per 100,000 among the white population; (2) that syphilis, as indicated by the Wassermann reaction, is about 6 times as frequent among the Negroes as among the Whites. These figures can be duplicated and, in many instances, increased in other communities where the Negro population is large.

It is obvious, therefore, that a large field is open for effective antituberculosis work among Negros, for there is no reason to believe that the tuberculosis mortality rate need be so much higher among them than among the whites. It should be possible to bring the curves of the tuberculosis mortality rates for both groups much closer together than they are at present. This is borne out by the fact that twenty-five years ago the Negro mortality rate was much higher than at present and that during this period there has been a steady decline.

When one considers that this race furnishes large numbers of the servants in our homes, as cooks, nurses, maids, laundresses, etc., it would seem that some effort would be made to reduce the incidence of both infections.

Tuberculosis in the Negro is an interesting chapter in the etiology of this disease.

The history of the Negro in the United States dates back to August 1619 when a Dutch ship entered the James River and landed a cargo of slaves in the colony of Virginia. (Matas)—"Thus at Jamestown, twelve years from the settlement of the colony of Virginia and one year before the Pilgrim Fathers had touched the new world, began

that system in the British Continental Colonies, which under the fostering care of England, overspread the land. During the years from 1619 to the opening of the American Revolution, 1776, more than 3,000,000 African bondsmen were imported into the thirteen British Colonies."

In 1865, at the close of the Civil War, the slave population had increased to 4,000,000, and now, 1922, or three centuries after their first introduction to this country, the Negro population has increased to 10,463,131.

Among the early importations many diseases, notably yaws, elephantiasis, sleeping sickness, etc., were introduced but, owing to unsuitable climatic conditions these infections gradually died out and eventually became rarities.

The existence of tuberculosis among the original African and, indeed, among the slaves in the anti-bellum period was practically unknown. If one goes over the medical journals published during the first half of the 19th century, an occasional article will be encountered reporting "an undoubted case of consumption in a Negro." Furthermore, the rarity of the disease is almost universally attested to by those practicing in the South during that period. "To the question propounded to Dr. Cartwright in 1859: 'Is not phthisis very common among slaves of the Southern States and unknown among the native Africans at home?' he replied: 'That phthisis so far from being common among the slaves of the slave states, is very seldom met with'." (Matas.)

This is in accordance with accepted facts regarding the etiology of tuberculosis, namely, that the disease is unknown among the savage and primitive peoples and that the appearance of tuberculosis among them is coincident with their first contact with civilized whites.

The original African slaves, therefore, may be assumed to have been free from tuberculosis. That they remained so for the two hundred and forty-four years of slavery may be ascribed to the following facts: (1) They lived in agricultural communities and hardly at all in large centres of population; (2) reports to the contrary, they were almost universally well housed, well fed and safe guarded, in so far as possible from illness. The last consideration would be dictated by policy if not by sentiment as they represented property and extremely valuable property at that.

So far as one can learn, therefore, following the Emancipation Proclamation, the Negro population, which for the most part lived on the plantations drifted into the nearest city or town. Without resources and with little or no experience in fending for themselves it was inevitable that they should crowd into the poorest and most unsanitary quarters; likewise they were not efficiently fed; and finally, and more important, they were brought into contact with the two diseases which have since exacted such a heavy toll of lives, namely, tuberculosis and venereal infection.

In so far as tuberculosis was concerned the drama was that which has been enacted in so many other races. The implantation of the tubercle bacillus in virgin soil, no tolerance such as occurs in races exposed for centuries to the disease and, as a consequence, rapidity of the spread of the disease from individual to individual.

The ultimate result of the factors just cited has been to cause a tremendous morbidity and mortality rate due to tuberculosis.

As has been stated above it was the opinion of many that the inroads from tuberculosis alone would ultimately, and at no distant time, destroy the race. Time has shown this opinion to be fallacious. In spite of the high mortality rate from tuberculosis the Negroes continue to increase in numbers, and while there has been a decline in the death rate it is still abnormally high. Tuberculosis continues to be a serious problem with them and because of their association with the whites no less a menace to the latter.

There can be scarcely any difference of opinion as to the far reaching effects of the modern crusade against tuberculosis. It is the first great effort directed towards the control of a universal disease; and, while in the beginning the sole object of the movement was to cause the disappearance of that disease, it has gradually broadened its scope until directly or indirectly most of the problems relating to public health are influenced.

In spite of the long duration and the intensiveness of the propaganda against tuberculosis, it is interesting to note that it has been, for the most part, effective only among the whites. The influence it exerted on the Negro population has been almost nil. The reasons for this are probably to be ascribed to the following facts: (1) No special meet-

ings were held to directly interest them; (2) little of the literature on the subject appearing in the daily papers or the magazines was read by them; (3) their aversion to going to dispensaries and hospitals; (4) and in my opinion the most important, the inability of the white nurses to influence them.

Whether these reasons are correct or not, the fact remains that in spite of the high incidence of the disease among them, institutions devoted to the care of tuberculous patients had relatively few Negroes and the few who visited the dispnsaries paid but one or two visits and then ceased coming.

The Henry Phipps Institute of Philadelphia has always been located in the midst of one of the largest of the Negro settlements in Philadelphia. For the first ten years very few Negro patients came to the dispensary and those few rarely paid more than two or three subsequent visits. Most of the Negro patients we treated were those admitted to the Wards of the Hospital in a dying condition. A recent survey we made of the Negro situation in Philadelphia confirmed this in regard to other institutions having a large Negro population in their immediate neighborhood, namely, that after the initial call they rarely paid many subsequent visits.

This state of affairs began to interest us as far back as 1912. At that time the writer became associated with the Whittier Center, an organization having as its object the promotion of the health of the Negroes of Philadelphia. It was felt that something should be done towards attacking this problem and that something different was needed as the methods which had proved successful with the White population had failed.

It seemed to us that it was worth trying the experiment of carrying on an educational campaign among them through the medium of a colored nurse. This experiment began on February 1st, 1914. The following table shows clearly the effect of intensive work among them:

| Mostly Ward Patients. | | Colored Nurse Began Work. | |
|---|---|---|---|
| 1904 | 47 | | |
| 1905 | 28 | 1914 | 121 |
| 1906 | 76 | 1915 | 117 |
| 1907 | 57 | 1916 | 141 |
| 1908 | 49 | 1917 | 142 |
| 1909 | 67 | 1918 | 140 |
| 1910 | 37 | 1919 | 190 |
| 1911 | 48 | 1920 | 245 |
| 1912 | 45 | 1921 | 400 |
| 1913 | 57 | 1922 (8 months) | 475 |

In July 1914, two additional nurses were furnished. At this time a special clinic was established at the Phipps Institute and was placed in charge of a capable colored physician, Dr. Henry Minton.

In 1920 the Philadelphia Health Council became interested in the venture and through its aid three additional colored nurses and two colored physicians were assigned to the Institute. At present we have a force of six nurses and three physicians working among the colored population. In addition the Jefferson Hospital for Diseases of the Chest has one colored physician and one nurse.

Recently, we have established a subdispensary in another district and are about to place a second one in still another area.

In addition to its specific problem of dealing with tuberculosis the Phipps Institute conducts a prenatal and postnatal clinic and a syphilis clinic.

Our experience with the Negro in these special clinics was similar to that in the tuberculosis dispensary, namely, few patients belonging to that race, so long as they were handled by white nurses.

The following tables show the growth of these special Negro clinics as soon as a colored worker was placed in charge:

Prenatal Clinic.

| | |
|---|---|
| 1921—New Cases | 28 |
| 1922—New Cases from February 1st to date | 50 |

Prophylactic Clinic.

| | |
|---|---|
| 1921—New Cases | 83 |
| 1922—New Cases from February 1st to date | 91 |

Syphilis Clinic.

| | |
|---|---|
| 1921—New Cases | 133 |
| 1922—New Cases from February 1st to date | 77 |

A year ago we arranged to take each one of the graduating class of the Mercy Hospital (a Negro Institution) for a period of two months. While the time is short it gives these nurses some idea of the tuberculosis and public health problems.

It is interesting to note that the first nurse taking this course was sent to Wilmington, Delaware, to take charge of a Negro tuberculosis dispensary which had been a failure. As a result of her energy the attendance at this dispensary was tripled in two months and the dispensary days increased from one to three.

To further substantiate this there is the ex-

perience of the Jefferson Hospital for Diseases of the Chest. During the first six months of 1921 when the Hospital had only a part time colored nurse, who came to the Clinic once a week, thirty-nine (39) new patients visited the dispensary. During the second half of the year 1921, a full time colored nurse was placed in charge of the work and the number of new Negro patients who came to the clinic during this period was ninety-six (96) or nearly three times as many colored patients as were added to the roll the first half of the year.

Taking all these experiences into consideration, this deduction would seem warranted: That those Institutions that make use of Negro doctors and nurses for the care of patients of the same race are, from the standpoint of number of patients and regularity of their attendance, most successful in the treatment of Negro patients.

In a previous article on this subject the situation was summarized as follows:

As the matter stands at present, there is operating at the Phipps Institute a clinic held by and for Negroes (with expert white guidance and supervision) which is doing health work on the most modern lines and with a degree of competency which compares favorably with that of the average clinic for whites of the same kind. It is the only venture of the kind in this vicinity, and we know of no other like it anywhere. The general method of approach is that followed by most successful effort in connection with the Negro (as good a quality of endeavor by the Negroes themselves as can be secured with careful, sympathetic direction and supervision by whites).

The importance of the problem may be emphasized. Philadelphia has to-day upward of 140,000 Negro residents. They are only partially segregated. As servants, they go most intimately into many homes of the whites, and are a constant source of possible infection there.

When one considers that the mortality among this race ranges from 300 to 400 per 100,000 as against 100 to 125 per 100,000 among the whites, the problem is truly appalling.

1818 *South Rittenhouse Square.*

## TUBERCULOSIS IN RURAL VIRGINIA.*

By H. R. EDWARDS, M. D., Richmond, Va.
Clinician to Bureau of Tuberculosis Education, State Board of Health.

For purposes of discussion it may be more convenient to consider by parts the problem of "Tuberculosis in Rural Virginia," so I have divided my paper into three parts—the plan and purpose of our work, our statistical information, and the problem which we face.

### The Plan and Purpose.

The fixed policy of the State Board of Health is to operate its bureaus so they will be valuable alike to the medical profession and to the laity. Consequently our organization seeks always to create local interest in our public health endeavors; and there is no disease that affects the general health which more definitely calls for co-operative local effort than does tuberculosis.

We estimate that there are not less than 24,000 cases of active tuberculosis in Virginia, and our State Sanatoria afford bed facilities for approximately 700 patients—which means the handling of 1,500 cases each year as the virtual maximum. It must then be evident that additional facilities are demanded if we would save our consumptives and protect those who otherwise would be subject to infection.

The local practitioner is handicapped. If he too strongly urges treatment either at home or at a Sanatorium, his patient is just as apt as not to leave the conscientious physician and go to one who takes his responsibility less seriously. He is handicapped in another way. Ignorance among the laity tells why so few incipient cases reach the doctors. So we have to consider ways of overcoming both these obstacles: we must urge the doctors to urge the treatment even at the risk of losing some of their practice, and we must instruct the people generally so they will realize their dangers early enough to conquer them.

These objects are so interrelated that we must consider them together rather than as separate undertakings. Our bureau strives to reach every definitely active, every suspected, every contact case in rural Virginia. This is an ambitious plan which may never be realized in its entirety; but we are going pertinaciously toward its accomplishment, even if that accomplishment be partial.

*Read by invitation before the fifty-third annual meeting of the Medical Society of Virginia in Norfolk, October 31-November 3, 1922.

I may say incidentally right here and then dismiss this particular phase of the subject, that we do all in our power to stimulate general public health activities, full time health organizations for counties, sanitary officers or visiting nurses where local funds are not available for the larger undertaking, health associations among the adults of the communities, and health leagues for the children. This effort on our part is not inspired merely by loyalty to the general organization but every tuberculosis worker knows that as the general health improves the tuberculosis menace is mitigated.

Specifically, our work may be divided into two sections—propaganda and clinics. We use the former to create interest in the latter and to continue an intelligent interest in the tuberculosis problem after the clinic shall have been concluded. Our propaganda work is strictly educational. We use motion pictures, lectures and newspaper articles; and to create timely interest in a coming clinic we use dodgers and posters throughout the territory to be covered. Our lectures are, whenever possible, delivered in some vicinity church, on the Sunday preceding the clinic.

The function of the clinic is to make such a thorough physical examination as will enable an exact diagnosis. I regret to say that this object is not always to be accomplished. Symptoms simulating tuberculosis sometimes lead to definite suspicions but we have not the time for such complete diagnosis as will yield even a relative certainty. For such cases our only procedure is to advise the suspect that he place himself under the care of a local physician for further observation and study. Positive cases and contact cases are encouraged to undergo regular periodic examination. To all cases, active, arrested, suspicious or contact, State and National bulletins dealing with tuberculosis are sent.

I cannot too strongly state my belief in frankness when dealing with a case of tuberculosis. I do not believe that anything can be gained by dissimulation. It may sometimes be pardoned if the clinician does not tell the hopeless case just how impossible for him is any hope of recovery; but in all other instances I believe that frankness is the best, as it certainly is the most honest, of courses.

Wherever we hold clinics, we cordially invite all local physicians to attend; but the busy life of the average country doctor and the large territory which he has to cover make it difficult for him to spare the time demanded, so we do not have as large an attendance of the profession as we would wish; but we do have the moral support of the medical men I believe, almost without exception.

The non-attendance of the local doctors makes it necessary for us to take and furnish a record for each case. These records with our recommendations are forwarded to the family physician, if there be a regular one for the patient; and if the patient who has not a regular physician takes our advice and goes to a doctor, the record is available for the adviser.

Our nurse usually remains in the local field for the two weeks following the clinic. She visits positive, suspicious, or contact cases disclosed by the clinic and homes where there has been positive tuberculosis. She gives specific advice to the clinic cases and urges general sanitary improvements and habits of health and hygiene. These visits are not only definitely helpful to the known cases but they result in our discovering cases and contacts that would have otherwise remained unknown to us.

In each county we leave a record of all positive or suspicious cases. Our findings and recommendations accompany the record. With such a record, it is easy for the local health organization, whether voluntary or official, to follow up the cases; and follow-up is the most important phase of the work. When a man first knows that he has tuberculosis is the time to urge treatment. It takes little insistence then; but after a few weeks, especially if the disease makes no appreciable headway, the notion of treatment becomes vague. To handle this problem with relative adequacy, there should be a visiting nurse regularly employed for the county; and it is only through such an agency that the clinics can be made really effective, for some of the worst cases and the most dangerous sources of infection live in places that are inaccessible to the ordinary journeyer; and it needs the nurse to rout them out.

Parenthetically, I may say here that unless they are accompanied by adults somewhat acquainted with their histories, we avoid taking children for chest examinations. In childhood a pulmonary lesion is rare; but when we

do find one it usually has advanced considerably. What so many children need is preventorium treatment. Physical examination usually reveals infected tonsils, decayed teeth and cervical adenitis which may or may not be tuberculous in character. Tonsillectomy, dental work, proper diet and fresh air would go far toward curing most of the defects that give the impression of tuberculosis. Undernourishment is not for the most part the result of insufficient food but of improper food. It is surprising how many children do not drink milk; and they are almost invariably underweight.

Up to the present time, for the current year, we have held clinics in 26 counties in all parts of the state. We shall probably have visited 32 counties before the year is over—virtually one-third of all Virginia. One of the counties was visited twice. Such a number of counties could not have been visited and so many clinics held had it not been for the valuable aid rendered by the physicians at the State Sanatoria, to whom our bureau owes a debt of gratitude.

### Statistical Information.

Appreciating that early diagnosis of tuberculosis is largely dependent upon the symptom record, we endeavor to obtain as accurate a record as possible of each case. If we had the time for the taking of more detailed histories, I feel sure that some remarkable studies in heredity and predisposition might be made. Our records have been mainly concerned with histories referable to tuberculosis or other pulmonary trouble.

We do take a sort of social history, getting pertinent facts concerning housing and living conditions; but it is very difficult to get exact information on these subjects without personal visitation; and, since that has been impossible, I am including no definite findings on these topics. We may, however, safely say sanitation is not adequate in the majority of homes and that only a minority observe proper precautions regarding a sufficiency of fresh air, particularly while sleeping. It is interesting, however, to get reports concerning sleeping porches that are built after our clinics have been held and to learn also about subsequent improvements in living conditions.

In the family history of tuberculosis we try to note the members who have had tuberculosis, the character of the patient's contact with such as have had the disease or still have it, the duration of such a contact. We get a history of acute exanthemata or other troubles usually preceding or associating with tuberculosis. We record the particular history as to time, location of involvement and subsequent complications of pneumonia and pleurisy. We note hemoptysis, the dates and amounts, if followed by streaks and fever.

The present history includes all concise information on these subjects; loss of weight, cough, expectoration, afternoon fever, pains in chest, loss of appetite, gastric disturbances, fatigue, frequency of colds, hemoptysis, night sweats, pleurisy, dyspnoea, tachycardia, catarrhal conditions or other symptoms at all referable to tuberculosis or associated with it.

Physical inspection and examination of each case is made with the clothing removed to the waist line. Percussion followed by auscultation: first, on ordinary respiration to determine rate, rhythm, intensity and the ratio of inspiration to expiration; secondly, whispered pectriloquy; and, third, the expiratory cough followed by inspiration for rales. In particular instances more detailed methods of examination are used.

Ordinarily we base our diagnosis of tuberculosis entirely upon the past and present history of the patient with our interpretation of the chest examination. In the majority of cases, sputum and X-ray examinations are not practicable until after the clinic is concluded, but we sometimes have to wait for these evidences before attempting a definite diagnosis. We regard as suspicious, cases with slight physical variations such as roughened inspiration, slightly changed respiratory rate or pitch and those which may have indefinite crepitations in either apex. Suspicion intensifies when these cases afford a history of typical symptoms with no apparent cause for their occurrence. In my private practice, I would call many of these cases positive, for I believe we should be able to diagnose our cases before there is definite tissue destruction causing rales and profuse expectoration with cough; but it seems more reasonable to give the less definite diagnosis to the average local physician because he will generally agree with it while he would disagree with the positive finding. This results in keeping the case under observation.

We are using this plan of classification:

*Incipient*: Slight lesion, limited to a small

part of one lung or both lungs with no tubercular complications. The findings are those of slightly changed breath sounds (prolonged expiration), slight impairment of resonance with rales present, or absent, or inconstant. The symptoms are slightly constitutional in character.

*Moderately advanced*: Lesion may be in one lung or there may be lesions in both and it varies from intense disease in one-third of one lung to scattered disease with no cavity formation in an entire lung. No serious tuberculous complications present. Constitutional symptoms are more flexible than in the incipient cases—usually rise in temperature, loss of weight, loss of appetite gastric disturbances, etc.

*Far advanced*: Lesion more extensive than in the preceding. It may be in one lung with cavity formation or may extend throughout both. This class includes cases with serious tuberculous complications. Constitutional symptoms are those of definitely impaired function. These cases always have a guarded prognosis.

*Active cases*: Those that show definite evidence of constitutional symptoms due to toxic absorption, usually with rales somewhere within the limits of the lesion.

*Quiescent cases*: Those which for a period of two months have had no constitutional symptoms, with or without expectoration, and with physical findings that indicate a stationary lesion.

*Apparently arrested cases*: Those who for a period of six months have had no symptoms of activity and whose physical findings are those of a healed lesion. Those findings occur in infiltration or consolidation with the exception of rales. There is usually high pitched respiration with prolonged inspiration and a markedly increased whispered voice. Atelectatic rales are not included in the above.

These briefly express the details of our classification. We are not claiming for them that they are original in any way or that they are the best that could be devised; but we find that they serve our purpose fairly adequately.

Temperatures are taken at the time of the examination; but we do not regard this record as of any particular value except in cases of elevated temperature with evidence of its regular recurrence. Then we try to get a record covering several days, particularly when other indications may lead to a positive diagnosis.

Sectional statistics in Virginia will be misleading. The eastern counties are very conservative and they do not respond to our invitations as do those of the southwest. Some of the eastern counties have high tuberculosis death ratings, yet our examinations in those sections would indicate a low percentage of disease. To the contrary, in the southwest, there are large numbers of miners and lumbermen, used to having medical attention furnished free and in the habit of consulting their company doctors whenever any ailment occurs.

In the mountainous section of Virginia we find many with enlarged thyroids and a fair amount of hyperthyroidism. There is still some hookworm but definitely less than there was a few years ago. On the eastern shore and in the bay section there is more malaria; but I am inclined to think that some of the malaria histories were exaggerated—any kind of fever and chills being called malaria. Along the southern tier of counties, particularly toward the coast, the colored population is more numerous; and there we find the highest death rates for tuberculosis.

The tuberculosis problem of the negro is different from that of the white. Our examinations disclosed very few negroes with healed lesions. It would seem from our experience not only that the disease is more rife among the colored people but that it makes a more rapid advance with them. Our examinations of the definitely positive negro disclosed in practically all cases rapidly advancing lesions with few cavities. At least we did not elicit the usual cavity with high pitched respiration and markedly increased whispered pectriloquy. The findings seemed of a softer quality for the extent of the lesions than is customary among the white people. The prognosis in most of the cases with any advancement is guarded to grave.

One outstanding fact we found. We found a number of early cases; and we discovered that those who leave the rural sections and go to the cities to work most frequently return within a few years with actual disease.

In the mining sections we found that the actual miner is less subject to disease than is his family. Among the miners the disease is rare, especially if the man has been a miner all his life. This rule does not hold good for

men who had followed other occupations before entering the mines. The women marry very young and usually bear large families. This may account for part of the disparity; and it is possible that the home conditions are not as sanitary as those in the mine.

In certain sections of the State, intermarriage is so close that it may even, in some instances, be called consanguineous. In such districts we found a higher incidence of tuberculosis and a more advanced type. It would seem undeniable that the close ancestral combinations tend to increase the tendency to tuberculosis among the offspring.

The few cases of family history of tuberculosis or chest diseases that I have been able to investigate closely lead me to concur in the opinion recently offered by Govaerts (*Eugenics Record*, Cold Spring Harbor, Long Island, New York—A. R. of T. B., Vol. No 7, p. 547), "When the taint of tuberculosis is introduced by the father, a tuberculous class increases, and when by the mother a respiratory class increases."

For purposes of analysis, I have divided our cases into three types: Positive, suspicious, negative. Furthermore, we have considered white and colored separately.

Taking first the white records: of 2.518 examined, 859, or 34%, were adult males; 1,115, 44%, were adult females; 232, 9%, were male children; and 312, 13%, were female children. Of these 286, males, 33% were positive, 86, or 10%, were suspicious, and 487, or 57%, were negative. Of the adult females, 374, 33.5%, were positive; 122, or 10.5%, were suspicious, and 619, or 56%, were negative. Of the male children, 23, or 10%, were positive; 14, or 6%, were suspicious, and 195, or 84%, were negative. Of the female children, 23, or 7%, were positive; 24, or 8%, were suspicious; and 265, or 85%, were negative.

The figures for the sexes showed a marked similarity; although the women showed a slightly higher incidence both of positive and suspicious than did the males; but on the other hand, among the children, the incidence was higher among the boys.

Taking totals, we have 28% positive, 9.7% suspicious, and 72.3% negative. Of the total of 37.7% of positive and suspicious cases we found that more than one-fifth were not under the care of a physician; every one of them should have been. It must be understood in connection with these statistics that our findings do not indicate incidence in the general run of the population. Those attending our clinics were supposed to be selected cases.

Under positive family history are recorded all members of the immediate family, the paternal and maternal grandparents, the uncles and aunts; and our contact history refers to either intimate or restricted contact with any of the above or with associates. Of the positive cases, 56.6% had positive family history; and 45.6% had positive contact infection. Of the suspicious, 45% had positive family history and 36% had positive contact infection. Of the negative, 50% showed positive family history and 37.8% had been in some sort of contact with tubercular cases.

These percentage figures will indicate the high incidence of the disease. We did not class as positive those cases where the patient was unable to relate accurately the family or contact status. No doubt we would show a much higher percentage of positive history if we were to have completely accurate records.

Our records bear out the general impression that histories of measles, pertussis and influenza or similar diseases are very frequent in the records of tubercular cases. A satisfactory evidence of the value of general public health work was disclosed by our investigations along this line. We found that the adults showed a higher incidence of the preventable diseases in their childhood years, which leads to the view that our children are being relatively protected from such ailments. It stands to reason also that many of the children in families having a positive history, or where positive contact is noted who yet escape the disease, owe their immunity in large part to the fact that their resistance has not been lowered by the enfeebling communicable diseases.

The baleful effects of influenza were constantly obtruded; and it was an ordinary incident to find those who had suffered from influenza dating all their trouble from that period. Measles, pertussis and influenza, were in the order named the most frequent of the diseases recorded; and pneumonia and pleurisy took the next places. For the most part these were unilateral and the pleurisies were dry. As a general rule they were uncomplicated by lung abscess or empyema. We have found, however, a few chronic discharging pyopneumothoraces; and in practically every one of these cases we

found little or no parenchymatous lesion in the lungs. We did not examine the character of the discharges; but from the meagre information we could get of these cases we have concluded that the cause of their slow closing must have been due to adhesions which prevented a complete expansion of the lung.

Rheumatism was mentioned by a number. I do not place great store on malaria information, any ache or pain otherwise unaccountable being generally attributed to malaria. Scarlet fever was recorded in a few cases. Diphtheria was not a great factor. Typhoid had been noted in about 11% of the cases examined, and this incidence was almost entirely among the adults. Chickenpox had occurred in less than 1%, and the smallpox record was less than that.

We encountered great difficulty in obtaining accurate histories of blood-spitting. The amounts reported ranged from streaks while having bad colds to frank hemoptysis of as much as four quarts in certain cases. A definite record was made of the duration of all reported streaks or hemoptysis whether followed by fever and more blood-spitting or not. Several young girls reported blood-spitting in association with their menses. Of the positive cases 43.4% gave a history of blood-spitting; 30% of the suspicious gave similar histories, and 18% of the negative told the like. For the latter group particular care was taken to establish the history, but there were no demonstrable chest findings to account for the bleeding, yet some cases gave histories of profuse hemorrhages.

A temperature of 99 or above was found in 27.4% of the positive, in 30% of the suspicious, and in 18.7% of the negative. This record shows the necessity of taking the temperatures of suspected cases over a period of several days and not depending upon one temperature alone.

Cough was present in 70% of the positive, in 64% of the suspicious, and in 51.7% of the negative. In the latter a fair percentage was associated directly with colds and was not constant as in the other classes. Expectoration was frequent in all classes; positive, 67%; suspicious, 60%; negative, 42%.

Pulmonary tuberculosis was found oftenest in the incipient stage. Generally there was a right sided involvement usually in the upper or middle lobe. Left-sided lesions were rare. Basal lesions may have been present in several cases but physical examination did not alone give conclusive evidence, for there were cases with rales at one or the other base apparently not of pleural character, and among patients who had no particular symptoms, some raised expectoration and some did not. We found a number of apparently arrested cases and some apparently quiescent.

Glandular tuberculosis was found infrequently in adults; but we examined a number of children with enlarged cervical glands usually associated with infected tonsils and decayed teeth. We did not, however, have time to make tuberculin tests for those suspected, and that is necessary for a positive diagnosis.

Tuberculosis of the bone was rare; and it is interesting to note that, without exception, those examined by us and showing bone tuberculosis were without the pulmonary variety; that is, they were free from pulmonary lesions. There were a few cases of Pott's disease.

Intestinal tuberculosis was found only in a few cases, all in advanced stages; and these have since died. Tuberculosis of other organs was seldom noted; and to my knowledge, we did not find a single case of lupus.

There were over 900 colored people examined. With the exception of the particular type of lesion as mentioned above, they showed an incidence of infectious diseases quite similar to the whites, with about the same frequency of cough, similar expectoration and hemoptysis and like temperatures. Since all morbidity records seem to contradict these findings, I can explain it only by the view that we had a disproportionately large number of negroes who came for precautionary examinations.

Of the 1240 positive and suspicious cases, including both white and colored, we recommended sanitorium treatment for 254. That is only 21% of the total and may seem a small proportion; but our sanatoria facilities are limited and we only recommend those who fulfill the following conditions: First, they must be ambulatory—only in rare instances do we endeavor to send to the sanatoria advanced cases indicating a poor prognosis; secondly, they must have such home conditions as would make it seem unlikely for them to benefit by home treatment—if the home conditions are such as to promise a cure we advocate their utilization.

Incidentally, it may be remarked that of

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those recommended to take treatment at a sanatorium, a large proportion accepted the advice. Some of these remained until discharge and were greatly benefited; some returned the next day or so to their homes. These latter have been a marked detriment to our work since they discourage their neighbors who might be thinking of going to the sanatorium or who are taking the cure at home.

### Our Real Problem.

Determination of the incidence of tuberculosis is our great work but it does not constitute our chief problem which lies in our inability to follow up adequately the cases we have found. This problem is relative. Where there are organized health activities, the difficulty is less; where there are no such organizations the problem becomes more serious.

We cherish the hope that, in those counties where there is a health unit or there is adequate nursing service, a permanent clinic may be established through the co-operative effort of the local physicians. That hope has been realized in Elizabeth City County; and there is no reason why it should not be realized elsewhere.

In some of the counties distances are great and transportation is difficult. We appreciate that these conditions are barriers, but mails go regularly; and, if the physicians report their cases, we can at least help by sending instructive literature to those who have the disease. That will not entirely subserve the best purpose, but it will help. However, we are powerless to aid in this line unless the doctors report their cases. There is a State law requiring the reporting of tuberculosis, but we never use the statutes except as a last resort. I may be pardoned, I hope, if I say that reporting of cases has been far from satisfactory. We know of hundreds of cases that are not reported. The doctors no doubt are busy and have some excuse for their negligence in this matter, but it is a serious problem and we cannot hope to solve it unless they help.

Co-operation of the physician is needed in another line. In all suspicious cases we endeavor to take a series of sputums. The inability of our nurses to follow up such cases has been a handicap; but we believe that these specimens would be repeated more regularly if the doctors would explain the necessity. If we send a single negative report, that generally ends the transmission of specimens from that source; and our containers remain unutilized.

I would like to impress upon the members of the medical profession in Virginia that when we ask co-operation we also express our earnest offer of co-operation. We are engaged to help the public, but we know that to help the general public we can do so, solely and only if we would be successful, through the instrumentality of the medical profession. The State Board of Health is not an agency for "State Medicine."

We are now compiling data on tuberculosis in Virginia; and we purpose to give you, from time to time, the benefit of our investigations. These papers will be published in the Virginia Medical Monthly, your official organ. We trust that our bureau may develop into a real necessity for all those, lay or professional, who are interested in the tuberculosis problem in Virginia.

I have spoken of co-operation in counties where there is organization of some sort. The problem is more difficult in the unorganized districts. People do not react favorably to strangers. When our nurses go into unorganized counties and make contact visits, previous to clinics, we are rarely able to get at the clinics those we want most. If some home people urge such attendance, the suspects are far more apt to come.

In one county, a local association, the King's Daughters, was largely responsible for the success of the clinic. They got out the cases, thirteen of whom were recommended for sanatoria treatment, nine of whom within a few days applied for admission. When such organizations are doing voluntary and valuable work in a community, they can virtually demand that people take advantage of opportunities for diagnosis.

Before I close this paper, I would like to suggest the need of some standardized method of diagnosis. It is now sometimes difficult to understand exactly what is meant by certain tuberculosis diagnoses. If a set standard could be adopted, all cases could be classified in accordance.

Let me in conclusion protest against the idea entertained by some even now, that tuberculosis is an incurable disease and that much unnecessary fuss is being made over it. Such people appear to think that if a man has T. B. he will die of it; the cases they have known

have all terminated fatally, so all will terminate that way. That is false reasoning. Where diagnosis is delayed too long, the chances of an arresting of the disease are, I regret to say, very slight; but tuberculosis in the incipient stage is easily curable. The death records in Virginia for the past five years show a decrease of twenty per cent for tuberculosis fatalities. Surely that is encouragement enough for the doubting; surely that should spur all of us to greater activity and more co-operative effort with hope virilized by the knowledge that we can still further and greatly reduce the economic waste due to this depleting disease and at the same time save lives and lessen sufferings—the great objects for which all of us constantly strive.

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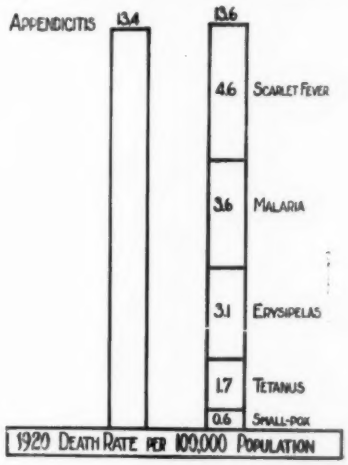
## IS PROGRESS BEING MADE IN THE SURGICAL TREATMENT OF ACUTE ABDOMINAL CONDITIONS?*

By A. MURAT WILLIS, M. D., Richmond, Va.

Medical science has not lagged behind in this era of progress; we can view with pride many of the triumphs which make the conflict with disease. The annual toll of diphtheria and croup has been reduced almost to a half of what it was seventeen years ago; while in a corresponding period of time, the number of deaths from typhoid fever has fallen to less than a quarter its original figure. Such facts as these show us that the efforts to lessen sickness and untimely death have not been in vain; and similar evidence is offered by the declining death rate of almost all the acute infectious diseases, influenced by a wider appreciation of the importance of preventive medicine and a more intelligent therapy.

As surgeons, however, we are more particularly concerned with the results that have been attained in our especial field. Here, too, brilliant achievements are not lacking; men are now living who saw the introduction of Listerism with its attendant benefits; within more recent years, improvements in the methods of inducing general anaesthesia and the discovery and wide application of local anaesthesia have materially reduced the danger of operative procedures; while the utilization of various laboratory aids has enabled us more quickly and certainly to determine the nature of the pathological condition from which the patient is suffering. But before we allow ourselves to be carried away with enthusiasm over these and similar very real advances, it might be wise to ascertain just what has been accomplished toward the reduction of the death rate due to certain important surgical diseases of the abdomen. In the present discussion, attention will be directed to only two; appendicitis and its sequel, diffuse peritonitis.




In 1908, the late J. B. Murphy, of Chicago, announced the results that had been obtained by the application of certain principles in the treatment of diffuse peritonitis. His method of treatment was so efficacious that the mortality rate of this dread condition was reduced to the astoundingly low figure of a little more than four per cent. in his hands; a reduction so startling that his work was immediately recognized as, apparently, constituting an important advance in the introduction of new principles and the omission of old, so-called injurious procedures. If one may judge by the literature of the past fourteen years, the last word was said in regard to the proper treatment of peritonitis when Murphy's paper appeared; and, although an occasional bolshevik may raise a voice of protest, this discord serves only to accentuate the perfect harmony of the "me, too" chorus proclaiming the solution of this weighty problem involved in the treatment of diffuse peritonitis.

Of the 10,040 fatal cases of peritonitis that occurred in the registration area of the United States in 1918, appendicitis was responsible for

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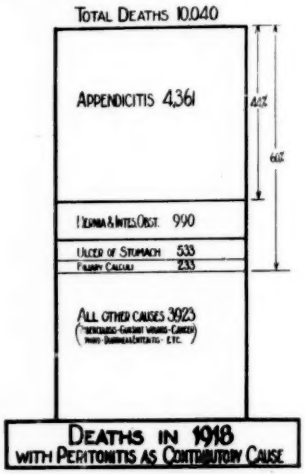
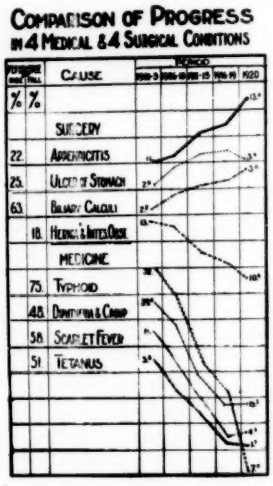
4,361, or forty-four per cent. of the toal number; and, strange to say, almost exactly the same percentage of fatal cases of appendicitis succumb to peritonitis. It would seem, therefore, that, in securing a means successfully to cope with peritonitis, we have robbed appendicitis of its chief danger.




In the five year period, 1901-1905, inclusive, the number of deaths from appendicitis per hundred thousand population in the registration area of the United States was eleven; in the succeeding five year period, it had increased to eleven and two tenths; in the period ending




with 1915, it was twelve and one-tenth; to rise to twelve and four-tenths in the quinquennial period, 1915-1919; while in 1920, *it was thirteen and four-tenths.* Thus, with all our boasted improvements we see a steadily mounting number of deaths from appendicitis.

Does such evidence justify us in our self-complacent attitude in regard to appendicitis? Is it the simple condition which even the laity now seem to regard it and have we definitely evolved the "sure" way of dealing with it? Hyperthyroidism is attracting an ever increasing amount of attention, and the problem of its management is, rightly, calling forth extended discussion, and yet to it were ascribed only 1622 deaths in 1920, as compared to over eleven thousand from appendicitis. Millions of dollars are expended annually and many of the best minds in the medical profession are concerned wholly in the fight against cancer, but appendicitis caused 2,000 more deaths than did cancer in 1920, when we consider only persons under forty years of age. Volumes have been written on the menace of diabetes, and the medical world awaits with bated breath the outcome of the clinical trial of Banting's pancreatic extract, in the hope that we may successfully cope with this disease; and yet, appendicitis was responsible for 3,685 more deaths in 1920 than diabetes when we consider only those under sixty years of age. Such facts as these should convince anyone that all is not well regarding the treatment of appendicitis and that the subject calls for the fullest and frankest discussion in order that this frightful yearly loss of life should be decreased.

**1919 DEATHS BEFORE & AFTER AGE 50**
BY PERCENTAGE OF RATE PER 100,000 POPULATION

| CAUSE OF DEATH | BEFORE AGE 50 | AFTER AGE 50 |
|---|---|---|
| APPENDICITIS | 83% | 17% |
| CANCER | 23 | 77 |
| ORGANIC DISEASES OF HEART | 20 | 80 |
| DIABETES | 29 | 71 |
| BILIARY CALCULI | 32 | 68 |
| ULCER OF STOMACH | 45 | 55 |
| HERNIA & INTES. OBST | 48 | 52 |

**PERCENTAGE OF DEATHS BETWEEN AGES 10-39**

| CAUSE OF DEATH | % |
|---|---|
| APPENDICITIS | 57.4 |
| TUBERCULOSIS | 57.4 |

Undoubtedly, the rising death rate from appendicitis and peritonitis has several causes. Prominent among these is the reduction of the

number of rural practitioners, rendering it more difficult and expensive for the patients to secure medical attention. As a consequence of this, a practice of home medication has developed, a prominent procedure of which is the administration of cathartics in the treatment of any abdominal pain. In practically every case of diffuse peritonitis that has come under my care, there has been a history of abdominal pain and free dosage with cathartics, the physician being called in only late in the course of the disorder. Though there are many causes other than inflammation of the appendix which might produce abdominal pain I am convinced that a campaign designed to teach the layman that every instance of abdominal pain is, possibly, due to appendiceal involvement and that cathartics are absolutely contraindicated might be instrumental in saving many lives. As it is now, too often we get the sequence of purgation, perforation, peritonitis, postmortem.

Another important factor in this rising death rate is the mental attitude adopted by both laity and doctor. Impressed by the utterances of certain of the leaders, doctors first, and then the public, have come to regard appendicitis as a simple matter and the selection of the operator is often determined on the sole basis of convenience. This attitude has had its effect on the rank and file of the medical profession; since the layman considers the operation so simple, many physicians though possessing no surgical aptitude or training feel that they can safely undertake it.

The operative procedures selected have the utmost importance in influencing the result of treatment. A practice strongly condemned by Murphy and his followers was the attempt to remove the exudate which is encountered in cases of diffuse peritonitis; this being reprehensible both because the exudate is beneficial in nature and also because the attempt to remove it by irrigation of the abdominal cavity tends to produce "shock." Experience has led me seriously to question the correctness of both of these statements, the reasons for this skepticism being presented in the following discussion.

The entrance of infectious material into the peritoneal cavity calls for the outpouring of leucocytes and unformed defensive substances in the plasma. Undoubtedly, in its its inception, this exudate is designed to combat the infection; but with the passage of time, it becomes converted into a mass of decomposing protein material. Years ago, it was shown that the introduction of albuminous material into the peritoneal cavity of experimental animals enabled bacteria injected simultaneously to secure a foothold and produce a peritonitis, though the injection of the bacteria alone produced no serious effect. When, as the result of an appendiceal perforation, bacteria escape into the peritoneal cavity and, in spite of nature's efforts, succeed in producing a diffuse peritonitis, the debris of the exudate serves but to favor further growth and development; playing the role of a culture medium for the organisms. These old investigations have shown, therefore, that the exudate of a diffuse peritonitis, instead of combating the infection actually favors its development and, for this reason, every effort should be made to remove it from the cavity.

For another, probably more important reason, the removal of this exudate is demanded. Murphy condemned irrigation of the peritoneal cavity because it tended to shock the patient. The practice based on the pernicious doctrine of "get out quick," leaving the abdominal cavity filled with the decomposing fluid constituting the exudate is far more prone to cause shock than is the removal of the exudate by saline irrigation. Indeed, the insertion of the conscience-salving drain is tacit acknowledgment of the desirability of removing this fluid, but the futility of attempting the removal by drainage seems demonstrated by all investigations of the efficacy of these supposed pathways for escape of the fluid.

Recent investigations tend to show that the earlier theories advanced to explain the condition of shock are inadequate; and the evidence that is now available indicates strongly that in many, if not all cases, it is due to the entrance into the blood stream of toxic substances arising from the injured tissues. Thus, Cannon and his co-workers have shown that crushing the thigh muscles of a cat will cause the development of a condition which is indistinguishable from shock as seen clinically, and this will develop if all afferent nerve pathways are destroyed by section of the lumbar cord. On the other hand, clamping the vessels of the leg prevents the fall in the blood-pressure; which occurs promptly on removal of the

clamp. French surgeons, from clinical observations, were early impressed with the fact that there appeared to be a toxic factor in traumatic shock, and they have accumulated many observations in support of this view.

The investigation of Dale, Barger, Laidlaw, and others serves to explain the mechanism that is probably involved and also to identify one probable agent concerned in the production of shock. They have shown that histamin, a cleavage product of protein, when injected intravenously in small doses causes a marked fall in the blood-pressure, and this depressor action occurred in spite of arterial constriction and an absence of cardiac weakening. Further study showed that the fall in pressure was due to capillary dilatation, accompanied by an increase in the permeability of the capillary walls, the latter leading to a loss of fluid from the vessels and a consequent increase in blood concentration identical with that seen in traumatic shock. It is believed that histamin is only one of a number of substances which arise in the process of protein hydrolysis; a hydrolysis which may occur in dead tissue free from bacterial contamination but which is markedly accelerated by the presence of proteolytic organisms.

To summarize, it may be asserted without fear of contradiction that certainly many cases of traumatic shock are due to the entrance into the circulation of toxic materials which arise as a result of protein cleavage. Among these cleavage products, histamin has been identified and its effects after intravenous injection are similar to or identical with those which occur in animals whose thigh muscles have been crushed and lacerated and in men who have sustained wounds involving extensive destruction of muscular masses. From a practical standpoint, it has been shown clinically and experimentally that striking benefit may be obtained by the prevention of the entrance of these toxic agents into the circulation, either by removal of the dead tissue or by clamping the vessels leading from the traumatized area.

If we accept the view that autolytic decomposition of the protein of dead muscle can occur to such an extent that the cleavage products enter the circulation and produce shock, does it not seem that even more pronounced effects will follow from the decompostition of a nitrogenous fluid teeming with proteolytic bacteria in a cavity with such powers of absorption as are possessed by the peritoneum? The answer to this question seems so obvious that it would seem almost insulting to present evidence in support of the statement that absorption of toxic substances from the peritoneal exudate may cause a shock-like depression of the circulation; while, conversely, the removal of this exudate results in a prompt improvement. Nevertheless, experience has shown me that many able surgeons are so imbued with the idea as to the beneficial role of the exudate that they seem deaf to any argument which may be advanced against this view.

*Johnston-Willis Sanatorium.*

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DISCUSSION.

DR. M. CALL, Richmond: As an internist I am not competent to discuss at all the technical procedure of Dr. Willis. I can, however, say something about the reaction reading his paper has had on my mind. I think it is extremely fortunate that these facts and conclusions should have been brought before a combined meeting of medical men and surgeons, for it is from the medical men primarily that these cases come, and the average medical man's knowledge of results from a certain surgical procedure is necessarily limited to cases that come under his own observation.

I think that the medical man is entitled to know what are the fundamental facts that govern the surgeon in selecting a definite operative procedure for a certain case, and not only is this true in appendicitis, but especially true in exophthalmic goitre and ulcer of the stomach or duodenum. If Dr. Willis' statistics are true and his interpretation is correct, he has given us some valuable information. If the facts are incorrect I, as a medical man, would certainly like to hear some surgeon get up and refute them, or, what would be better, let the Society refer it to the Surgical Section for report at our next meeting.

DR. R. L. PAYNE, Norfolk: I do not know when I have listened to a paper that showed more thought and more study and more real intimate knowledge of the subject than Dr. Willis' discourse this morning. It was fine.

There are two or three things that come to my mind. First, that the seeming discrepancy between the mortality rate in the present day of surgery in the last ten years, and in Murphy's time, in the ten year period prior, may possibly be due to the fact that we are having such a tremendous increase in the number of men doing surgery, and such a tremendous number of these men probably doing an indifferent, poorly qualified, and more or less inaccurate type of surgery. Given a case such as Dr. Willis speaks of, and give it to him to operate upon, there is no question about the results being better according to his mode of procedure because he has statistics that prove to him that his method is better, but for the general man doing surgery everywhere in the country and for the inexperienced interne, the Doctor's procedure presents a question that, to my mind, should be debated very seriously.

As to the drainage action, the drain becomes walled off within a few hours and never drains mechanically

as the laity has a conception of this drain action. That is a fact that can not be debated in any way at all, because a drain does not drain. You can take a glass tube and sew it up in a dog's abdomen and then remove it after a few hours and it will not leak a drop. You can't get anything into it or out of it. The way I understand drainage, and the consolation I get out of drainage is that we are dealing with a toxemia and that when we leave an opening, we provide for a certain amount of escape of that toxin. How much that is we do not know, but we do know that, given a more or less moribund patient, or a very ill one, a certain amount of escape of toxin means the turning point to that patient one way or another. That is the real good, as far as my conception goes, that draining does. It provides an opening, a means of escape for certain kinds of toxic material, and if there is any good in the drain, as far as I know, that is it.

Now the great difficulty in comparing experimental work along these infectious lines with actual pathology in the human lies in the fact that it is very difficult to compare infectious conditions in animals with the human. We have learned a great deal along mechanical lines from experimental work on animals. I question very much along the line of general peritonitis whether we can rely on the findings in a comparison of animals to man. The resistance of a dog to infection is tremendous as compared to the human.

In regard to washing out the peritoneal cavity, I have never done it except in the early years. I am not doing it now, and I am not going to do it until I know a great deal more about it. There are certain factors that don't seem to me will allow Dr. Willis to conclude very accurately that peritoneal lavage is yet to be accepted as standard technique.

DR. E. J. HORGAN, Washington, D. C.: From a personal interview I had with Dr. Willis this morning, and now having had the privilege of hearing his paper, I think that there are several things which he brings forth that we should carefully consider, and as Dr. Willis has asked for a frank and open discussion of this paper, I feel free to discuss them.

*First*, the mortality statistics and the comparisons he made; *second*, the experiments; and, *third*, the operative procedure which he employs. With regard to the statistics: Dr. Willis has given mortality statistics, not operative statistics, and he made this clear in his paper, but I think it should be emphasized. The statistics which he gave are mortality statistics which show death rate in appendicitis from all causes and complications. Exception could be taken to comparing the mortality statistics of appendicitis which occurs most frequently in young adult life with a disease such as malignancy which occurs most frequently later in adult life.

The experimental work which Dr. Willis did was interesting, especially in regard to what he succeeded in doing in raising the blood pressure in the dog after the animal had been made toxic by septic material obtained at operation from the human, but he did not tell us whether the blood pressure remained up. The difficulty we find in practice is to raise the blood pressure in a patient where it has been lowered. We are able to raise it for a short period of time by the injection of a salt solution in the circulation, or by the injection of a solution of acacia, but the circulation soon loses it as the tissues take it up and the blood pressure is again lowered when the volume is lost. To combat this loss in blood volume in sepsis or hemorrhage the transfusion of blood has been the most successful agent we have employed.

*Third*, with regard to the operative procedure: I think Dr. Willis' work opens a big field for discussion. The opinion has been held by most surgeons in recent years that washing out the peritoneal cavity with salt solution will have the effect of disseminating the infection throughout the peritoneum so that the lymphatics, not only in the area near the appendix, but those all through the abdomen, will take up the septic material making the patient more toxic. It may be that Dr. Willis is successful in removing most of the toxic material from the abdomen by the use of a suction apparatus and I think that, if his method is adopted his technique should be followed closely so that the toxic material is removed and not disseminated.

I want to say again that I admire Dr. Wilis for presenting this new method in the treatment of peritonitis resulting from appendicitis and also for the research work he did to try to prove its value, as well as for the success which he has had with his operative cases.

DR. W. A. PLECKER, Richmond: In consideration of the statistics that Dr. Willis gives, I think the apparent increase in the death rate from appendicitis is due largely to the fact that we are getting better registration than formerly. Six or seven years ago when we began our registration work, we did not designate peritionitis, as we do now, from one cause or another. Now, when a report of death from peritonitis comes into our office, we immediately inquire as to what the primary cause was, if not already stated, whether it was appendicitis, tubercular, gonorrheal, perforation of the intestines, trauma, or just what the primary cause was. I would like to emphasize the fact that we do not consider the term peritonitis as a satisfactory cause of death. What the primary cause was is asked, and in a very large percentage of cases it is due to appendicitis.

DR. A. M. WILLIS, Richmond: I attribute to a number of causes the increasing death rate in appendicitis, among which is the greater number of men operating, as Dr. Payne brought out.

In regard to drainage, I think the average surgeon has in his mind when he puts in a drain to do some drainage. I am not talking about obsolete methods of irrigation, but modern methods, the use of electric suction apparatus which will remove in one minute a quart of this material. I want to go in and get out as quickly as is consistent with thorough work, as you have a better subject to work on and he does not drift out in the next few days. Using the irrigation method, out of twenty-nine cases I have gone back once for operation.

Regarding dissemination of these infections: In the first place I do not see how it is possible for irrigation to carry the infection any further in diffuse peritonitis. When you are running the solution in at the rate of a pint a minute and drawing it out at the same rate, you see how quickly this can be done.

We must not attribute too much to error in statistics. Why is it three of these acute surgical diseases are going up while others are going down? I feel that this death rate for appendicitis is about right, if anything a little low. Peritonitis may be high; the mental attitude of the doctor has a great deal to do with it. If he can avoid a certificate showing death from appendicitits, he prefers to. We may have the peritonitis a little high. The laymen do think there is a little danger in peritonitis. That forty-four per cent. may be a little high but the death rate for appendicitis is not high. Just figure a little bit and see if it is not our idea to minimize things.

## THE FORCES WHICH PREVENT MODERN MEDICINE FROM BEING A SUCCESS.*

By A. A. HOUSER, M. D., Richmond, Va.

I am sure you will agree that physicians are not making a success in the cure of many people who come to them. I do not mean that a great many are not given some help, and, if testimonials were solicited, most physicians could put up a strong defense as to their ability to select very potent and well suited medicines. We all know that testimonials are far from being reliable, when we see the good things said by responsible people in the praise of worthless advertised cures.

This is a talk to physicians, about our ability to render the greatest health service to our patients. So far as building up a high degree of stable health, in the majority of patients, we are not putting it over in a very satisfactory manner.

As a further argument to show the reason for this paper, I would invite you to make a record of the number of doctors all of your new patients had before consulting you. And again, to look over the list of people whom you have treated in the past five years and find out how many have seen other physicians since consulting you. Surgeons will not have as great a percentage of patients who have seen other surgeons, as the medical men, but the number of people, who have been operated upon and helped, is not greatly in excess of those who have gotten no benefit from their operations. The fact that a patient was not helped by the operation is by no means proof that the operation was not indicated.

A further evidence of the failure of medicine to meet the needs of people is in the number who consult all classes of irregular doctors, who are less fitted to render service than the regular physician. But the treatment that the patients of these irregular doctors receive seems often to be just as satisfactory as ours.

I am going to show you why we do not render a greater service to our patients, and stop, to some extent, the migration of people from one doctor to another, more especially from the regular school to all classes of irregular practitioners. There is a law that has exerted its influence over man ever since he came into being, the tendency to follow the line of least resistance. It is much easier to give a dose of medicine that will relieve pain, than it is to ascertain the cause of pain and remove it. Surgeons as a routine remove pathology, which is highly proper, but often fail to give any serious attention to the cause of that pathology; the patient is not relieved, or in a short time other conditions of poor health appear.

The methods of the plant and animal doctors are quite different from ours. First, they establish a condition in which a normal plant or animal would make a success, then lend their attention to the disease, and the results are usually gratifying. The average physician gives serious attention to the disease. He sometimes mentions or suggests reforms, but feels that his time is too valuable to undertake an educational program, assisting his patient in the better ordering of his life, and improving his living conditions.

One of the great reasons why patients do not profit by the good advice that is given them by their physicians is that it is not told in a manner that they can understand. It is impossible for a physician, or any one else, to give a message to a man in an effective way, unless he is acquainted with his mentality and his life plan.

In the treatment of our patients, we must grasp the idea that the vital reason for a man's being well is that he may make a success of his life. The process of assisting him into so ordering his life, that he may make a success of it, brings about the only condition in which health is stable.

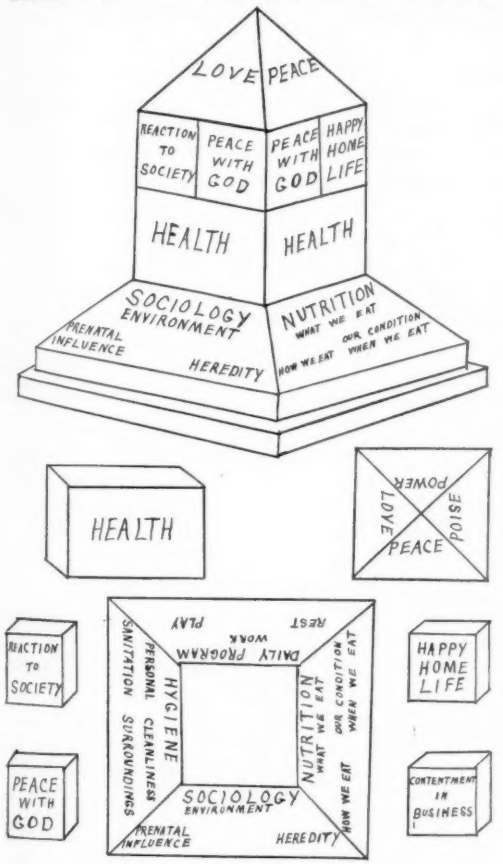
In most cases where disease is found in plants and animals, it is the direct result of some type of living error that has existed over a long period of time. And likewise in man, the fact that he is sick is evidence of error in his general living plan. There is usually one living error that is so much more prominent than the rest that we are apt to prematurely draw the conclusion that that is all that is necessary to correct in a patient.

For the past ten years, I have seen so few people who approach or resemble a well ordered life, that I have had made this little statue, representing the vital points of a well ordered and successful life. It is hard for us to pick out living error, unless we have well fixed in our minds the proper structure of a well ordered life.

*Read at the fifty-third annual meeting of the Medical Society of Virginia, in Norfolk, October 31-November 3, 1922

I repeat the thought that the forces which tend to make a man successful, tend to make him well. At this time I want to demonstrate that health is a part of this ideal frame work on which a well ordered life is constructed.

The statue is composed of four strata, the first being made up of four blocks, representing the four physical forces, which make the foundation on which health stands. The next




is health. The third stratum is made up of four blocks, representing the four kinds of mental reactions. They are the only processes that can endure in man, on health, without demolishing it. The fourth stratum represents the story that the man's face tells. It tells accurately the state of his physical and mental being. The only problem is to learn to read the language.

So in speaking of health, we are not in a position to do a great deal with it, unless the foundation that supports it and the type of thinking are right. If they are right, health has a great opportunity not to be impaired. If there is error, however, that can be corrected, we have a wonderful force to assist our medical and surgical intervention, towards making our patient well.

Life is made up of two kinds of reaction, those that have to do with the generation of energy, and those that have to do with the expenditure of energy. The physical forces, the tangible things outside our bodies, acting upon us, have most largely to do with generating energy. The mental forces, the intangible things within our brains, acting upon us, have most largely to do with expending energy.

The four divisions of this foundation are: Sociology, the effect that other people have upon us; Nutrition, the food we eat, and the method of handling it; Daily Program, how we work, rest and play; and Hygiene, which embodies personal cleanliness, sanitation and surroundings.

Sociology manifests itself through prenatal influence, heredity and environment. While the effect of heredity and prenatal influence cannot be avoided by the patient himself, his environment can often be corrected or improved. There is probably no such thing today as a perfect environment, but if we can grasp the picture of a relatively perfect environment, we can do much towards improving it. A person living in an environment constantly suggesting the danger of sickness will find it no help to his health, or in one of food fear will find it no help to his digestion.

All the growth we have attained and the strength we have gotten has come directly from the food we eat. It is necessary for us to have food that contains the proper nutritional elements, and our ability to get the proper nourishment depends upon these three factors, what we eat, how we eat, and our condition when we eat.

The third physical block is that of Daily Program. Work is a vital and primary thing, but there is a well defined limit as to how much work we can do in a day, with profit to ourselves or to our employers. Rest is equally important, and every man's cycle of work is going to be materially lessened, unless he has a definite program of recreation or play.

The last physical block, Hygiene, is, as a rule, more complete than any of the other three forces, from the fact that it is taught in

the schools and has been talked about more or less through the Daily Press.

No man can hope to be well, or stay well, without having his physical foundation reasonably well laid. With this foundation, health usually starts off favorably. But as man increases in age, there are mental reactions which develop and, if not harmonized, will demolish his health block, just as much as a failure to have his physical foundation well laid.

The first and greatest of these mental reactions is our Reaction to Society. As in the physical laws, we called attention to the effect that people have upon us, this mental reaction is the effect that we have upon ourselves, taking an unnatural attitude towards people. By an unnatural attitude, we mean people doing things not in keeping with their convictions, hoping to create a favorable impression. It is indeed refreshing today to see a person not effected by this reaction to society, such as changing his method of procedure to please people; lying to a patient, instead of telling him you do not know what is wrong. You have probably recognized your lack of effectiveness, in handling patients that you have allowed yourself to be concerned about whether you would please them or not. You have noticed the weak appeal of the salesman, or detailman, when he showed a concern as to what you were thinking of him. A spoilt child is a good illustration of an early reaction to society, using up energy destructively, that makes him more susceptible to disease than the child that is not spoilt. Social climbers is another class of people who waste energy by this unnatural reaction. Bashfulness and feelings of inferiority are prevalent conditions.

The second mental reaction, Peace with God, is one upon which a great deal of energy is often unconsciously spent. Every man has some religious conviction. What his conception of God is does not affect his health, but whether or not he is living in harmony with his conception makes a great deal of difference. A man may not be living in harmony with his religious conviction, but this condition has existed so long, that he fails to recognize the conscious and sub-conscious concern that is constantly disturbing him.

The third mental reaction is that of a happy home life, which should be made up of people who are congenial with each other and whose actions should be in concord, and they should have satisfactory sex life.

The fourth mental reaction is contentment in business. The amount of energy it takes to do a day's work, when we are doing something we like to do, on a plan that is our whole life plan, is practically nothing compared with doing something we are not interested in, or doing for a price, just as a means of support.

The fourth stratum, the cap stone, as we have said before, represents the story the man's face tells. This is the only part of the structure that is automatic. If you want to change your face, change your life. It is easy to tell a man's social standing by his face. It is easy to tell a man that is properly fed, from one that is over-fed or under-nourished. It is easy to tell a tired man from one that is rested, it is easy to tell a dirty man from one who is clean. It is easy to tell a man's reaction to society. It is not difficult to ascertain his religious happiness, his home life, or his contentment in business.

The more attention you give to this business of face diagnosis, the better you will be. I have often told women that they could throw away their powder and paint, straighten out their lives, and their faces would have a greater appeal. As physicians, if we want people to respect us and have confidence in us, we must be good physicians. give them earnest, honest advice and disregard the patient's reaction. Your face will unconsciously put it over.

We are now living in the midst of a popular wave of a new development in medicine, endocrinology. Almost every physician recognizes the fact that there are unlimited possibilities in the endocrine treatment, if he is able to select the proper endocrines. We all realize again that endocrine disturbances are often brought about by the mental condition of the person. Worry, fear and unhappiness will stop mother's milk. Excitement disturbs your thyroid cases, and in almost every endocrine case there is an associated mental disturbance.

Isn't it plausible to suppose that we could all convert ourselves into great endocrinologists, by solving the problems and harmonizing the lives of our patients, letting their own glands begin to resume normal work?

*Professional Building.*

DISCUSSION

DR. A. M. BURFOOT, Fentress: The forces that prevent modern medicine from being a success can,

I believe, be expressed in two thoughts; first, dishonesty, and second, that proper effort has not been made. When I say dishonesty, I mean by that there are so many of us who fail to make the honest confession, that we need the help of somebody else to give the particular case the service to which they are rightly entitled. When you do that, the patient appreciates that fact.

I think we have a serious problem which we fail to grasp. We in a careless, haphazard, routine way treat the patient, failing to grasp the situation that the patient has not had the benefit of the best work of the profession, and the result is they slip from us into the hands of the class of fellows engaged in healing the sick and seemingly performing miracles, for they are claiming marvelous things. Co-operation we must seek and give, and when we have done that and the forces at our command have been utilized, there will be absolutely no room for the class of fellows who claim to be doing the miracles Jesus himself did when on earth.

DR. A. A. HOUSER: This is a subject that is very hard to discuss in twenty minutes. It is hard to make others understand what you are talking about in that time. The men in medicine that make a success are the men who have a lot of horse sense and not quite so much scientific stuff. I feel that the mind of the average physician today is being poisoned by the wonderful mysteries of modern medicine. The further we get away from healthy thought, the further we get away from the place where we are fit to live. While I am not talking against scientific medicine, I believe in it, it ought to be based on right living, and you can not do much until men have their lives harmonized so that they are fit to be made well.

Psychology is not a new thing. There is much literature being passed out to-day by so-called applied psychologists that really do not know what they are talking about. They are talking some good stuff but they are demanding too much for it. The only applied psychologist that ought to exist is the physician. He is the one man who has information enough to talk applied psychology.

## REGIONAL ANAESTHESIA.*

By SOUTHGATE LEIGH, M. D., F. A. C. S.,
and
JAMES H. CULPEPPER, M. D., F. A. C. S.
Visiting Surgeons, Sarah Leigh Hospital, Norfolk, Va.

The subject of anaesthesia is always most appealing, has been given much thought and attention by certain members of the profession, and yet the average surgeon is only too content to follow the easier and less troublesome course which, as a rule, is the employment of straight ether, an anaesthetic most obnoxious to the patient, and frequently followed by disagreeable and dangerous complications, even in the hands of an expert anesthetist.

Nitrous oxide-oxygen, which can with safety and satisfaction, be administered only by an expert with wide experience, has for a long time been the anaesthetic of choice when available. Its critics, for the most part, have spoken without proper experience in its use. No anaesthetic should be administered by the untrained or poorly trained, and yet ether can be given, in some sort of way, by the inexperienced. With nitrous oxide-oxygen that is impossible. Without special training and considerable experience it cannot be given at all.

That undoubtedly is the real reason that the best and safest of all inhalation anaesthetics known to the profession has not come into general use. Those who have anaesthetists skilled in its use, employ it widely and with the greatest satisfaction. Indeed, they would feel lost without it, would feel if they had to give it up that their surgery had taken a backward step of many years.

The friends and advocates of nitrous oxide-oxygen have never claimed that it was perfect. We, especially, have always maintained that the equilibrium of complete and relaxed anaesthesia was so sensitive, the excursion of the pendulum between too light and too deep anaesthesia so short, that it was very difficult to maintain a safe and satisfactory anaesthesia. And here is where the work of the expert anaesthetist comes in. The unskilled gives the patient either too little or too much, interfering with the operation in the former and causing cyanosis and danger in the latter.

Any doubt as to the proper position of nitrous oxide-oxygen that may have existed in the minds of the profession was dispelled by the reports of unprejudiced observers of its use during the World War. In these reports it was proven conclusively that it was by far the safest and least depressing of the inhalation anaesthetics.

We have been making wide use of nitrous oxide-oxygen during many years, and have published a number of reports of our work and experience. We have never claimed that it was perfect, but have striven to correct its imperfections and improve the method of administration.

We have in nearly all cases used morphia and atropia as an aid, just as we and others have as a routine, employed the same with ether. Even with that aid, there are cases, especially abdominal ones, in which the fleeting effects of nitrous oxide-oxygen have interfered with the proper relaxation of the parts. Here it has been our practice to add,

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from time to time, a very small amount of ether to the mixture.

During the past three years there has arisen in our minds a doubt as to the advisability of this combination, and especially as to its after-effects on the patient, particularly in upper abdominal operations. We have given the subject a great deal of thought and study, going so far as to return to straight ether in a series of cases, and still the question was not satisfactorily settled.

However, to our great relief, the advent of regional anaesthesia rendered further consideration of the subject unnecessary.

In abdominal work, as well as in other forms of major surgery, the blocking of the nerve supply of the site of the incision has given us just the aid that is needed to make nitrous oxide-oxygen practically always effective.

We have chosen to approach the subject of regional anaesthesia in this way, because we feel that this is, in many respects, the most important use to which it can be put. Without the slightest doubt it has answered our most earnest and persistent call for a method whereby we can continue to use nitrous oxide-oxygen in major surgery, without the aid even of a minimum amount of ether.

We have, of course, with the rest of the profession, always used some local anaesthesia. At one time we followed Crile's method of infiltration with a very weak solution of novocain in nearly all major work as an aid in preventing shock.

But employing nitrous oxide-oxygen always so freely with such satisfaction to our patients and to ourselves, we formerly did comparatively little work under local infiltration anaesthesia.

The advent of the present method of regional anaesthesia has produced more or less of a revolution with certain members of the profession. Very many minor and major operations are being performed painlessly and with but little discomfort.

Like so many advances in surgery, the method owes its success chiefly to two simple developments.

*First*: The discovery that large amounts of novocain could be used with perfect safety.

*Second*: That the novocain solution must be freshly made, as it rapidly loses its strength if kept for even a short period of time.

In reviewing the literature, we find that regional anaesthesia was advocated and practiced as early as 1887 by an American, Dr. Corning, who at that time, by means of injections around a cutaneous nerve of the arm, produced anaesthesia of the area supplied by that nerve. This method remained of little importance until 1890, when Oberts and Pernice produced a finger anaesthesia by injecting a solution of cocain at the base, and about the nerve trunk. These injections were made perineurally, and that is the generally accepted method of today.

Owing to the fact that the above mentioned authors used cocain in high percentage solutions, the method did not gain favor, until Braun in 1905 introduced the preparation from the suprarenal gland, at the same time diminishing the percentage of the cocain in the anaesthetizing solution and thus rendering this type of anaesthesia at all safe. To Braun, also, is given the credit of being the first to give a detailed description of the technic applicable to different regions of the body.

Most of the notable achievements in injection anaesthesia were accomplished about sixteen years ago by the discovery of novocain. This preparation had about one-half the anaesthetizing properties of cocain, was readily soluble in water, sterilizable by boiling, non-irritating to living tissue, and about one-fifth as toxic as cocain. In fact, owing to its high anaesthetic efficiency, and its low toxicity in comparison to cocain, Bier, before the Surgical Congress of 1909 in Belgium, voiced the sentiment that cocain should no longer be used as an injection anaesthetic, but should be limited in its field of work to anaesthetizing mucous membranes. This doctrine has also been advocated by Professor Victor Pourchet of France, who has given to surgery the latest developments of this work in recent years. From his report, he has performed practically all of the difficult major, and delicate minor operations with this type of anaesthesia.

There are many advantages of regional anaesthesia which we wish to bring to your attention:

*First*: The low mortality risk. In our series of operations we have used a fairly large quantity of the solution, and have yet

to notice any deleterious effects which in any way might be ascribed to the action of the anaesthetic agent.

*Second*: The reduction of post-operative danger, and the elimination of all complications following a general anaesthetic, especially nausea and vomiting, with the consequent after effects of starvation and dehydration which occasionally cause disastrous results.

*Fifth*: The many special advantages in cer- of anaesthesia secures a physiological section of the nerves and suppresses completely the influence of trauma upon the higher nerve centers. This fact has been fully brought out and demonstrated by Crile.

*Fourth*: Absence of danger from asphyxia, such as in operations for empyema, wherein a large cavity might rupture into a bronchus with the use of general anaesthesia and the patient be unable to rid himself of the fluid by coughing.

*Fifth*: The many special advantages in certain operations such as hernia, where the muscle walls are entirely relaxed, no straining of the wounds from stertorous breathing, and elimination of elevating intra-abdominal pressure.

Operations such as hemorrhoids, appendectomy, cholecystomy, gastro-enterostomy, any operations about the vulva, perineum, vagina, cervix, lower uterine segment, rectum, fingers and toes, in the hands of a skilled technician, can be done with comparative ease, both from the standpoint of the operator and patient.

*Sixth*: The anaesthesia continues for one and a half to three hours after operation, during which time the operative field, particularly the severed terminal nerve endings, has become protected by the flow of serum before the anaesthesia passes off.

The advantages over simple infiltration anaesthesia are as follows:

The anaesthesia is entirely distinct from the operation proper, being instituted beforehand and at a point distant from the operative field, thus obviating the danger of necrosis of the tissues, such as sometimes occurs in local infiltration.

It is difficult to point out any disadvantages when used in suitable cases. It takes no longer time than general anaesthesia. If proper precautions are used, no toxic symptoms need be feared. We ourselves have used as much as 150 c.c. of one per cent. solution of novocain, with twenty min. of adrenalin in several cases without noting any toxic effects. Harris states in several thousand injections of novocain, involving all parts of the body, that he has never seen serious toxic symptoms.

For convenience regional anaesthesia may be discussed under the following headings:

1st. Foraminal, where the nerve supplying the part to be anaesthetized is injected either within or as it emerges from the bony foramen; for example sacral and coccygeal nerves through sacral hiatus.

2nd. Paravertebral, where the nerves supplying the field of operation are injected as they emerge from the spinal column, along side of the body of the vertebrae. This injection not only blocks the motor and sensory nerves to the skeletal tissues, but on account of the anterior communicating branches with the sympathetic system which supply the viscera, it also anaesthetizes the organs within the thoracic and abdominal cavities.

3rd. Peripheral, where the distribution of the nerves to the operative field are fan-shaped in character, the injection to be done at the base of the fan. In operations on the forearm and hand, the injections are made on the outside and inside of the arm above the elbow joint, while those for the fingers and toes are made at the base of the parts.

Preceding ordinary abdominal incisions, where paravertebral anaesthesia is not required, the injections are made at a distance from and completely around the proposed incision, the long needle being introduced both subcutaneously and into the substance of the muscles, thus cutting off entirely the nerve transmission from the part, and affording most satisfactory relaxation. In such cases the necessary intra-abdominal manipulations then require a minimum amount of general narcosis. The after-following pain is also greatly lessened and delayed.

At present we are performing about fifty per cent. of our operations under regional anaesthesia alone.

It is the method of choice in all hernias, except in small children, in uncomplicated appendicitis, in operations about the hands and feet, including bunions, in face and neck operations, in empyema, and rib resection, cholecystostomy, and enterostomy.

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In prostatectomy, the combined sacral injection and abdominal blocking is used, furnishing complete anaesthesia and relaxation.

Sacral anaesthesia, which seems entirely devoid of immediate or remote danger, furnishes the most brilliant example of regional anaesthesia. Occasionally, the anaesthesia is not complete, but it usually is, and permits without the slightest pain all operations about the rectum, perineum, and vagina. One of our notable cases was a resection of the rectum by the Mayo method, with no pain whatever, until the peritoneum was reached, when the slight sensation produced was relieved by novocain infiltration.

The scalp can be completely anaesthetized. We have done one decompression entirely under regional anaesthesia.

In various upper and lower abdominal operations, the preliminary blocking of the site of incision by novocain not ony anaesthetizes the parts but produces the most perfect relaxation, far better than can be gotten with ether. With the abdominal wall thus relaxed, the operative procedures are carried on nicely with nitrous oxide-oxygen without the aid of ether.

The same is notably true of all operations on the kidneys, where much less general anaesthesia is required and the complete relaxation produced renders the operation very much simpler.

Regional anaesthesia is applicable to practically all the operations of surgery, either by itself, where we are using it in fifty per cent. of the cases, or in conjunction with nitrous oxide-oxygen where the novocain greatly lessens the amount of the general anaesthetic and renders unnecessary the addition of ether. The blocking of the nerve supply also either prevents or markedly reduces the amount of shock.

The technic required in regional anaesthesia with novocain is comparatively simple and varies according to the different parts of the body involved.

Freshly prepared solutions are absolutely essential and special syringes with flexible needles are most convenient.

Study has to be made of the nerve supply of the parts and there must be complete blocking of the nerves to produce perfect results.

We have had a few cases of spinal anaesthesia in which the anaesthetic effect was perfect, and yet we feel that that method of anaesthesia has not yet reached the stage where it is safe enough to recommend for general use. There is but little doubt, however, that novocain in spinal anaesthesia is the safest preparation so far discovered and its use marks a step in the right direction. Yet the most conservative clinics, including the Mayos, still feel that it is not altogether a safe procedure.

By adopting regional anaesthesia, we have greatly curtailed the use of general narcosis. The employment of mixed forms of anaesthesia, while not attractive in theory, has given much better results in our hands, in the way of less shock, pain and discomfort to the patient, than simple narcosis.

The public in general is waking up to the newer and simpler method of overcoming pain and the unpleasant factors of surgical operations, and the sound of the old adage, "I hate to be put to sleep," is being heard from all directions. They are beginning to realize that a simpler and safer means of taking away their pain and suffering from surgical operations has at last been found.

### Discussion

Dr. Claude Moore, Roanoke: Dr. Leigh took up this subject from the standpoint of surgery. I would like for you to see one or two things from the standpoint of the patient.

Too many people do not mind taking an anesthetic until they have had one, and then they never want another. I believe that many times we frighten patients by telling them that we are going to use regional anesthesia, without explaining to them how it is done. A great many patients go to sleep in their room and wake up in their room, and until they have had an anesthetic they do not know what they are going through.

I have known a great many men to get out their long hypodermic needles, and fool around mixing their solutions, and frighten the patient with the idea of local anesthesia. It is surprising how many people hate to have a needle stuck into them. The less they know about the procedure the better satisfied they are, and it behooves us to use great care in not frightening the patient and so get his best co-operation at the beginning.

Dr. S. H. Graves, Norfolk: I just want to voice a plea for the more general use of Regional Anaesthesia and also in conjunction with Nitrous Oxide-Oxygen.

Dr. Leigh has mentioned some very good points in this connection.

The proper handling of the patients is important. It is usually well to carefully explain to them some of the details of the procedure.

The technic of Regional Anaesthesia is simple and is best learned by watching the surgeon who is skilled in its use. The solutions must be freshly and care-

fully prepared. We find the nurse in charge of the operating room to be the best one to handle them.

In anesthetizing the nerve trunk, it is often hard to make the injection in close proximity to the nerve, but by using a large amount of the solution, the result may be easily obtained.

Our experience wih Regional Anaesthesia has been most satisfactory and we find it greatly superior to the "infiltration" or "local" methods formerly employed.

Dr. Southgate Leigh, Norfolk, (closing): We have had a number of debilitated old people, suffering from hemorrhoids, where we were afraid to use general anaesthesia, and in these cases we found no depression whatever from Regional Anaesthesia by the sacral route.

A spot of skin is first anesthetized, using a fine needle. Then a long flexible needle is inserted and passed carefully up into the sacral canal, and through it is injected a sufficient quantity of the solution to cause complete anaesthesia of the entire rectal and perineal regions. This result and complete relaxation are produced in from five to twenty minutes.

## REPORT OF A CASE OF PULMONARY ABSCESS OF LOWER RIGHT LOBE TREATED BY ARTIFICIAL PNEUMOTHORAX.*

By C. L. HARRELL, M. D., Norfolk, Va.

Mrs. "M," white, aged 27, housewife.

Family History: Negative.

Past History: Usual diseases of childhood, not very sick with any. She has not been entirely well since birth of first baby six years ago. Had influenza in 1918.

Present History: On August, 24th, 1920, was confined at home; had a normal delivery. For two months prior to the birth of baby she was sick with headaches and general debility. Four hours after delivery she began to have convulsions; she had four at home, was then taken to St. Vincent's Hospital in an unconscious condition. She remained unconscious until the following day. On entering the hospital her temperature was normal, pulse 68, respiration 18; she had no more convulsions. Three days later, August 27th, her temperature shot up to 101 3-5, pulse 100, respiration 26. On August 30th, she began to complain of pain in right chest and slight cough. On September 1st, temperature rose to 102 3-5, pain in side more acute, cough worse, and a diagnosis of pneumonia was made. On September 7th, she began to expectorate thick prune juice sputum, and was growing rapidly worse. On September 12th, the pain in right side was so acute that it required morphine for relief. Cough had gotten very severe and she was raising large quantities of blood tinged mucus with a very fetid odor.

On September 15th, I was asked by the attending physician, Dr. R. S. Kight, to see the case. I found a critically ill woman, coughing almost incessantly and raising large quantities of muco-purulent substance, blood streaked, with an odor so foul that one could barely stay in the room. She had a temperature of 103, pulse 140, complaining of severe pain in right chest, difficult breathing with a choking sensation that was made worse when she turned on her left side.

On examination, which was quite superficial on account of extreme illness of patient, I found the lower right lobe almost flat to percussion front and back, and dullness over the upper lobe. There were heard numerous coarse rales and squeaks over entire right lung, most marked in the back. The heart was quite rapid, the sounds were distant and feeble, no murmurs were heard. I concurred in Dr. Kight's diagnosis of abscess of the lung and advised an attempt at compression, though the patient appeared to be too sick to stand any kind of an operation.

On September 16th, I gave her 300 c.c. of air under local novocaine anesthesia. This aggravated the cough for a while and the expectoration was more profuse for the next two or three days, but much to our surprise the temperature dropped to 99 the first night and the pulse to 90, and she had a fairly comfortable night. The first compression was given about 3 P. M., but she still required morphine for relief. On September 18th, the temperature had again risen to 102, she was given 200 c.c. of air with a manometer reading of —2+2. An examination at this time showed that I had a fairly good compression of lower portion of right lung. On September 24th, she was given 400 c.c. of air with a +3 pressure. She was still coughing a great deal and expectorating very freely, but from now on she showed slow but steady improvement. On October 4th, she got 400 c.c. with +2 pressure; October 13th, 500 c. c. with a +2 pressure.

The patient was permitted to leave the hospital on October 15th,—seven weeks from the time she was taken sick, four weeks from the time she began to take gas. She was much improved, though still coughing and expectorating, with a temperature ranging from 98-100, and pulse from 80-90.

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The next refill the patient came to the office. On October 27th, she got 500 c.c., November 23rd, 550 c.c., December 7th, 200 c.c., and December 21st, 450 c.c., with a +4 pressure. At this time it was thought best to discontinue the compression. She was improving all the time, cough and expectoration getting less and less, but she was getting very nervous over the treatments. She took gas for 13 weeks, had nine refills, taking in all 3,500 c.c. of air.

On February 12th, 1921, she reported at the office with a normal temperature, pulse 80, weight 120, which was about her normal weight. I failed to mention that several specimens of sputum were examined, all being negative to tubercle bacilli.

The patient was last seen on October 24th, 1922. Her temperature was 98, pulse 88, weight 130, more than she had weighed in five years. She says that she still has a slight cough and slight expectoration, at times. She was also complaining of pain in left shoulder, and occasionally in right chest. On examination several badly decayed teeth were found which might explain this.

On chest examination there was slight dullness over lower right back from angle of scapula down. Distant breath sounds and a few coarse rales were heard after cough over same area, and as far forward as mid-axillary line. She looks well and says she is feeling well. She states she has been doing all of her own work since about six months after her illness.

COMMENT: I believe if any other kind of surgical procedure had been attempted on this lady she would have succumbed as she was almost moribund. As to how the compression worked, I am not prepared to say, except that the diseased area of lung was compressed or partially compressed and by cutting off the blood supply and lymph supply a smaller amount of toxins got into the circulation. As the lung was compressed, it was more readily emptied and a smaller amount of secretions were formed. Remember that the air separates the parietal from the visceral layer of the pleurae and serves as a cushion between the two, thus relieving pain.

I believe in all cases of pulmonary abscesses, especially in extremely ill cases, pneumothorax should be given a trial before more radical surgical procedures are attempted. It is much simpler, safer, and can be administered with minimum amount of shock.

*Taylor Building.*

## WHERE CAN WE FIND OUR CASES OF INCIPIENT TUBERCULOSIS?*

By CHARLES R. GRANDY, M. D., Norfolk, Va.

Ever since the medical profession recognized that tuberculosis was curable, if it could be treated before it was too far advanced, a constant effort has been made to find incipient cases and get them to the sanatoria for treatment. When we were beginning the organized campaign against consumption, we all thought ourselves capable of finding these incipient cases for at that time we were depending almost entirely on physical signs to determine the stage of the case of tuberculosis. But, about ten or fifteen years ago, it began to dawn on us that the early cases we had felt so proud of discovering had frequently had symptoms years before, from which they had recovered only to have them appear later, and so they were not beginning cases at all. And then I began to appreciate that I had never seen incipient cases, and began to distrust my powers of diagnosis, until I had talked the matter over with some of our most able specialists and found that they too were having the same difficulties. Now, the tuberculosis specialists have realized this difficulty to such an extent that they have ceased calling cases in which they find very little trouble, "incipient tuberculosis,' but rather term them "minimal," as they are the smallest lesions we can find. If then this "minimal" tuberculosis is not just beginning, but is starting up in a case which has been infected a long while before, where shall we look for our incipient cases? When do they really start?

Not so many years ago we all thought that tuberculosis was contracted in the same way that measles is. viz., that when the germs entered a susceptible body they promptly grew, and that in a short time active tuberculosis developed. Now, we realize that while this may happen in a few cases, it generally does not happen. This change of opinion was brought about first by the finding of evidences of healed tuberculosis in the great majority of autopsies, when a thorough search was made for such lesions; and secondly, by finding that almost all children of school age give a positive tuberculin reaction, though babies as a rule give no such reaction. These findings, along with many other experiments, not only show that nearly every one is infected, but also that only a small proportion of people

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infected with tuberculosis develop the active disease. Furthermore, it is pretty generally conceded that the establishment of active disease in an adult does not usually come from bacilli derived from outside sources, but generally from those which have been enclosed within the body, but which have "broken loose" when the body resistance has been lowered. Indeed, there are some authorities like Fishberg, that maintain that tuberculosis is always contracted as a child, and only develops when a lowered vitality allows a quiescent lesion to become active.

On the other hand, Eugene Opie has shown that it is entirely possible for a massive dose of bacilli derived from without to overcome the body resistance, and to set up active chronic disease, for this has been repeatedly done in experiments on previously inoculated animals. Both sides, however, agree that there has been a primary infection, which is being pretty well taken care of, until a further infection, either from within or without, breaks down the body resistance and sets up the active disease.

There are undoubtedly a few incipient cases occurring in an adult, but most of these apparently run an acute course, as was shown in some of the African soldiers serving in the French army. But most adult human tuberculosis is like the experimental tuberculosis produced in animals already vaccinated with an avirulent strain of bacilli, which still further verifies the belief that all our chronic cases occur in people whom a previous infection has already made more or less immune, or in whom the resistance has at least been increased.

Now, in children as in animals inoculated with avirulent bacilli, the infection is practically always contained in the lymphatic system. (This of course does not include those acute cases where the bacilli are found all through the tissues, though the meninges are most markedly involved). The germs are most frequently in the tonsils, cervical, tracheobronchial, and mesenteric glands. Here they are more or less securely walled in, and frequently lie dormant for years. This is the real incipient stage of ordinary tuberculosis. It is not a lung tuberculosis but a gland tuberculosis, and in most cases it will never develop into a lung tuberculosis, for as Krause expresses it, "In the great majority of infections —fully ninety per cent.—the lymph nodes are competent in restraining the infection and keeping it quiescent." But, in the remaining ten per cent. they are not competent, and they allow the bacilli to escape in such numbers that they become implanted in other tissues and the frank disease develops. This change from the inactive glandular infection to the active tissue disease is the critical moment in the development of tuberculosis To prevent this change is a decisive point in the fight against tuberculosis, for if we can only hold the bacilli quietly in the lymph glands, they will remain harmless to the host, and will, of course, be unable to infect other people.

What then are the signs of this spreading infection? They are not so much the extension of physical signs, which are often slight enough in themselves, "nor the local symptoms of cough, sputum, or diminished function, which may be the residue of healed or arrested lesions, as they are the constitutional symptoms of fatigue, malaise, fever, irritable pulse, etc. These are the symptoms which almost always usher in clinical tuberculosis, and which announce the breakdown of resistance, if one wishes to view the case in this light." (Krause).

To what then can we attribute this breaking down of resistance and the liberation of the bacilli from the lymph glands? First, there are intercurrent diseases of many kinds, physical and emotional stresses, abnormoral metabolism, or indeed anything which puts added strain upon the part which contains quiescent, tuberculous foci. But another element enters here. It is the time when this added stress occurs, for if the bacilli are firmly shut up in a well sclerosed lesion, it will take a good deal more to liberate them than if the extra infection, such as measles, should occur when the tuberculosis infection is more recent and not nearly so well walled in. When we add to these strains a malnutrition caused by lack of proper food, fresh air, and sane living, we have an added condition for the development of the active disease, as has been recently shown in some of the central European countries.

In what way then shall we find the beginning cases of tuberculous disease? They are for the most part found in certain groups of children who should be examined and, if

found suspicious, kept under observation. These groups are:

1. Children from homes in which there are, or have been, active cases of tuberculosis, and in whom we can naturally expect frequent massive infections.

2. Children who are ten per cent. under weight—for a large per cent. of these children have been found to show signs of activity.

3. Children who are not keeping up with their classes, who are listless and tired, especially those who are missing much time from school on account of not feeling well.

4. Children with frequent coughs or fever.

Of course, I do not mean all, or even the majority of these cases have beginning active tuberculosis, but I do mean that they need watching, especially as is most frequently true, if they fall into two or more of these groups.

Suppose that an undernourished child is brought in for examination, and we find a quick pulse, an afternoon temperature of 99.5 or more, a history of loss of strength or "pep," with possibly some cough, what physical signs do we expect to establish our diagnosis? Let us remember first that the constitutional symptoms just mentioned are most important, and in children it is up to us to find another cause for them before we say that they are not from tuberculosis rather than the reverse, just as in the case of haemoptysis we feel that it is due to tuberculosis until proved otherwise. The first demonstrable change is probably the d'Espine sign, or the hearing of the whispered voice down to the fourth dorsal vertebra. This merely suggests enlarged tracheo-bronchial glands, which may or may not let the infection pass on to the rest of the body, but which may be large enough to be decidedly dangerous. Then we get increased dullness and fremitus between scapulae being as a rule more marked on the right. This may or may not be accompanied by rales and by broncho-vesicular breathing, which, however, must not be confused with the normal puerile breathing found in this area. We must not, however, confine our search to the upper lobes, for tuberculosis in children may appear in any part of the lungs, and is frequently more generalized than in the adult, and may even be very hard to distinguish from a generalized bronchitis. I am not talking of the acute miliary tuberculosis, but a chronic form to whch there is marked resistance, and in which the child has a much better prognosis than an adult with a like amount of involvement. Children, as a rule, do not go to cavity formation, but cavities are at times found and do not necessarily mean an unfavorable outcome.

To recapitulate, if we find an undernourished child that tires easily and has a quick pulse and an afternoon temperature of 99.5 or more, especially when accompanied by cough, and on repeated examination we find the d'Espine sign, slight dullness, BV breathing and a few rales in the upper lobes, or persisting rales at another point, we feel justified (unless another cause can be found) in putting that child on our list as an incipient case of tuberculosis, as defined in this article. If the child's general health and resistance can be built up, and no further massive infection occur, the disease should not develop beyond this stage; but bad surroundings and habits, poor food and intercurrent disease may increase this slight infection into a disease which will be very difficult to check.

When the disease progresses beyond this first or most usual form of childhood tuberculosis, we may get a form of disease closely resembling the chronic tuberculosis in adults. On the other hand, we may have a pneumonic form which seems to simply melt into smaller or larger cavities which is hard to diagnose from a broncho-pneumonia, or we may have a general miliary infection. In the last two forms the case seems to have little or no resistance, and resembles one in an experimental animal who has not first been treated with an injection of avirulent bacilli.

Long before we had our present knowledge, the Anti-Tuberculosis League of Norfolk felt that the best way to prevent the development of tuberculosis was to build up the body resistance of the children who showed latent or incipient trouble or, as we expressed it in those days, the "pretubercular" cases. For this purpose a cottage was purchased at Cape Henry in 1911, where from 12 to 23 delicate children from tuberculous households were cared for during the summer, and their strength and weight built up. As there were no facilities for bed patients, children with marked fever or severe coughs were excluded, though there were often cases who had previously had

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pronounced symptoms, which they had overcome by rest and food at home. Practically, without exception the children improved, not only in health but also in their studies, for they were followed up in the schools during the winter, and made to report at clinic at stated intervals. The results among these children, many of whom are now grown up and married, have been at least as good as those obtained in the children's wards of the Maryland Sanatorium, for we only know of three of these children who have died of tuberculosis.

In 1920 it was decided to extend this work by aiding the nutritional work in the schools. This was done in a school, where the principal had at his own initiative asked for scales and was furnishing milk to the undernourished children. The Anti-Tuberculosis League agreed to pay for milk for the poorer children if, on investigation of the homes by our nurses, the children were found to need it. Later it was thought wise to examine all these children at the clinic, for the malnutrition is often attributable to other causes, such as hookworm and tonsils, though these complaints do not necessarily exclude tuberculosis.

Since scales have been put in all our schools, more and more children have been sent for examination, until the work has grown almost beyond the ability of the Monday clinic, which is set apart for white children, besides colored children coming on other days, numbering over 100 in all. From this group are selected the children for treatment at the seashore the next summer, and they again will be watched through the next winter, and the succeeding years, to see that their physical strength is maintained, so as to prevent the latent glandular tuberculosis from changing into the active disease.

We have reasons to feel proud of the fact that in Norfolk the tuberculosis death rate has been reduced from 307 in 1906, to 94 in 1921. But over against this we find that intensive work in Framingham has reduced its death rate from tuberculosis to 28.7, and we see that Norfolk still has much to accomplish. It is my opinion that this reduction in the death rate can best be accomplished by finding the real incipient cases in the children, and preventing them from becoming active instead of sending the active adult cases to our excellent sanatoria for treatment.

Of course, I am not so optimistic as to feel that we can expect at the present, or even in the near future, to find most of these really incipient cases. But, still I feel that this is the only line we can follow if we would successfully prevent the development of the disease, which is a much more efficient method as well as far cheaper than attempting to cure the well developed cases. Our trouble lies in getting hold of the cases at the proper time. To be sccuessful we must have the full cooperation of the schools, not only of the school doctors and nurses, but more especially of the teachers who, I am glad to say, are now pretty generally beginning to appreciate that a dull child is very frequently a sick child, and when that child's health is improved his mental capacity is improved along with it, and the teacher's work lessened by just that much. With all the teachers looking out for their pupils' health, as many are now doing, more and more children will be sent us for examination, and more and more will be given a chance to keep their latent tuberculous infection from developing into active tuberculous disease.

*Bank of Commerce Building.*

DISCUSSION.

DR. R. C. CARNAL, Rochester, N. Y.: I listened with a great deal of interest to the paper by Dr. Grandy, and I think it is one of the most constructive that I have ever heard. The question of diagnosis of tuberculosis in children is exceedingly hard. These children, as Dr. Grandy says, are underweight, and below par in general, and usually come from homes where there is exposure to open cases.

We have found that good stereoscopic X-ray pictures are of great help. Unfortunately there are a good many men doing X-ray work who take excellent pictures but can not exactly interpret their findings in chest conditions. For that reason, I believe, a good many cases are overlooked and a good many cases are diagnosed wrongly. I believe that we can do no better than in every suspicious case, wherever possible, have pictures taken by men that we know can interpret their findings after they get them.

Another thing I would like to emphasize is this, that once you have come to a definite conclusion, or even strongly suspect that a child is infected, do not let that child go after he has apparently come to normal weight, and normal health, but bear in mind that any time within the next fifteen or twenty or thirty years that case may develop clinical tuberculosis. You should always watch these patients, and whenever you see them looking badly, apparently run down, give them a little word of caution.

DR. L. T. ROYSTER, Norfolk: One of the darkest chapters in life, certainly in medicine, is the chapter of tuberculosis, and yet the brightest ray of hope that has come into that chapter for many years was the announcement that practically all tuberculosis

was acquired in childhood, practically all. We owe Dr. Grandy a debt for bringing this matter to our attention in this very concise manner.

About the question of diagnosis of incipient tuberculosis, I do not think I have ever diagnosed a case of it incipiently. I think I am getting nearer to that today than I have ever come, not that I make that diagnosis yet, but following out the lines that Dr. Grandy has emphasized which I will not rehearse at this moment, we suspect every child who has malnutrition, who is not gaining weight, and who does not respond quite promptly to regulation of diet, etc., as having tuberculosis. Malnutrition, that I discussed yesterday, may result from almost every proven clinical entity that we know of in medicine. Any child that is not gaining proper weight, suspect it of everything on the calendar in medicine, but greatest of all tuberculosis. When tonsils are removed in the presence of glandular involvement in the neck, regardless of how slight, they should be examined for evidence of tuberculosis. If subsequently the glands break down or are removed after having broken down, the glands should be searched for it. You want to know positively whether they are affected or not.

I want to stress one more thing. Some of you may think I am a crank; I am, but I just want to emphasize this point; let us forget this thing of simply curing the patient, or child principally, of the present acute illness; that has to be done, but the minute you have done that, think then in terms of that child fifteen, twenty, or twenty-five years hence, and only that way. The foundation of society is the child from every possible standpoint. Treat that child as though it were already the President of the United States, or governor of your state, a man of finance in your banks; treat that child now so as to make it the best mother or father of the next generation, and don't think only of the acute condition, if you please.

Dr. A. W. Graves, Lacey Spring: I feel that every man who has the life of his community at heart is deeply interested in this subject of tuberculosis in children. I think in those homes where children are suspected of tuberculosis, the thermometer is an important criterion to teach them to use. If they have a slight rise in temperature, there is something wrong, it is a signal that something should be done, and if we instill and inculcate in their minds that we are their physicians, I feel that the thermometer is very beneficial.

Dr. W. E. Vest, Huntington, W. Va.: A very essential point made by Dr. Carnal is that in regard to the stereoscopic X-ray. I have practically abandoned the use of the flat plate as I have found the stereoscopic set much more satisfactory. Moreover, the X-ray plate ought to be read in the light of the physical examination and history. One can not depend absolutely on the X-ray findings any more than on the history of the physical examinations; these factors have to be correlated.

When considering temperature, especially in childhood, before making a definite diagnosis of tuberculosis, we should be sure to exclude the tonsils. Purulent tonsils will sometimes give in children a temperature which very closely resembles that of tuberculosis. Of course, the Von Pirquet is of great value here as in childhood generally.

Dr. Sam Wilson, Lynchburg: I have been impressed with the fact that a large number of children diagnosed as incipient tuberculosis give a negative Von Pirquet; and when we put these children on anti-syphilitic treatment they get well. We believe there is a very closely associated relationship between syphilis and tuberculosis. If you have a child with a cough, wasting, temperature 99½° to 100,° having a negative Von Pirquet, put that child on mercury and iodides. It is very difficult to differentiate tuberculosis from syphilis, and I believe that the man who will put these cases that are difficult on iodides and mercury has many surprises in store for him.

Dr. Wm. B. McIlwaine, Petersburg: There are three questions that I would like to ask Dr. Grandy to answer for me. It has been stated that sixty per cent. of the cases of tuberculosis in childhood are caused by the bovine type of the bacillus. I would like to ask Dr. Grandy what he thinks of that statement. I am of the opinion that ninety per cent. of the cases are of human origin.

I would also like to ask his idea regarding treatment of glands infected with the tubercule bacillus by the use of X-ray, and of the treatment of cases by cold air.

Dr. Chas. Grandy: I am sorry I can not answer all these questions that have been put to me. In the first place, I did not mean when I gave this paper to exclude anything we were already doing in prevention of tuberculosis, to stop work of destruction of sputum or prevention of infection from the open case. The reason for this paper was to try to get all the medical profession to thinking on the subject of tuberculosis as starting in childhood, and to get them to looking for it in children, because there still are a number of doctors who have come to me this year and asked if I had ever seen real active tuberculosis in children. To this usual question, we say we are seeing lots of them, not only early cases but those with marked lesions.

The little sanatorium that we have is a cottage where we put our children in the summer and return them to their homes in the fall, and in this way we are able to improve their health so as to keep them up with their classes in school.

## NOTES ON THE THERAPEUTIC USE OF BACILLUS ACIDOPHILUS MILK IN RICHMOND.*

By GEORGE F. REDDISH, Ph. D., and E. C. L. MILLER, M. D., Richmond, Va.

The use of Bacillus bulgaricus in treating intestinal disorders has, in the experience of many, been of doubtful value, and for that reason the more conservative naturally will demand scientific evidence before placing their confidence in a very similar organism, Bacillus acidophilus. The phrase "sour milk again" is not an expression that will hold the attention of the physician unless he has kept in touch with the more recent developments in intestinal bacteriology.

The scientific phases of the present problem have been in the experimental stage for about ten years; recently definite results of medical interest have developed. The treatise by Rettger and Cheplin (1921) is the cul-

*Read by title at the fifty-third annual meeting of the Medical Society of Virginia in Norfolk, October 31-November 3, 1922.

mination of work done by Rettger and his colleagues over a period of a number of years, the climax of a series of investigations which have been of much scientific interest. The object of the first part of their work was to study in detail the effects of certain carbohydrates on the intestinal flora, by which they accomplished a change in flora from the putrefactive to an aciduric type. This phase was followed by another in which the feeding of living cultures of B. acidophilus, the organism which is dominant in the intestines of the breast fed infant, and produced a change from the putrefactive flora to one largely aciduric, a similar change to that produced by carbohydrate feeding. This change can be accomplished by the administration of rather large amounts of such sugars as lactose and dextrin, as has been shown by other investigators also, but the living culture method used by Rettger and Cheplin has been found to be superior to carbohydrate feeding.

Herter and Kendall (1908) found that the ingestion of large amounts of carbohydrates caused a decrease in the activity of the proteolytic organisms in the intestines of the adult. Rettger and Horton (1914) showed that white rats fed low protein diets showed much simpler intestinal flora than when on a mixed diet containing a high percentage of protein. In the latter experiment, the flora was changed over partially to that of the acidophilus type, the percentage of Gram-positives in feces from such rats showing from 85-100%, as against about 35% before the diet was changed. Hull and Rettger (1914) observed that the intestinal flora of the white rat can be changed from a type resembling that of the adult human to one almost indistinguishable from that of the breast fed infant by the addition of lactose to the diet. The predominating bacterial species in this flora was Bacillus acidophilus.

Rettger and his colleagues were never able to implant Bacillus bulgaricus either by feeding carbohydrates or live cultures of the organism. This is significant, for it shows that an aciduric organism normally present in the intestines is easily implanted if the proper conditions are supplied, but that a foreign organism, such as Bacillus bulgaricus, which is not normal in the intestines, cannot be induced to grow and establish itself in this new environment. It is necessary that implantation be effected if the putrefactive types present in the intestine are to be inhibited.

Torrey (1915) made a very practical application of this principle when he used lactose in the diet of typhoid patients. By using 250-300 grams of lactose per day he succeeded in obtaining stools from these patients which approximated in consistency those of infants, which means that the aciduric organisms displaced or at least reduced materially the numbers of typhoid organisms in the intestines. A little later, Torrey (1919) working with dogs, showed that lactose, dextrin and also starchy foods, to some extent, when added to the diet in large amount caused such an increase in the aciduric flora as to exclude almost entirely the putrefactive types. He found, furthermore, that protein of mammalian tissue encouraged the putrefactive types, while the vegetable proteins did not. This change in the intestinal flora is always followed by a definite change in the physical character of the stool. In the case of the hard, dry stool obtained in constipation, the change in flora results in the stool being transformed to a type similar to that of the young infant, i. e., soft, yellowish and non-putrefactive. Rettger and Cheplin (1922) found that chronic constipation responds to this form of treatment when other methods have failed, and the bowel movements become spontaneous, normal, soft and non-putrefactive. Such a change almost invariably is accompanied by improvement in the general health of the patient. They found also that diarrhea could be treated in a similar way with marked improvement and in some cases complete relief. Other cases treated by them with good results are: colitis, sprue and dermatitis. Cheplin and Wiseman (1921) report equally clear-cut results, especially in the treatment of constipation. Gompertz (1919) used broth cultures of Bacillus acidophilus with good results, both in treatment of constipation and diarrhea. Kopeloff and Cheney (1922) published similar data. It might be said, then, that the scientific work substantiating the merits of Bacillus acidophilus in its application for therapeutic use is past the experimental stage, and that it can now be recommended for general use in the treatment of a number of intestinal disorders.

It has been found that young milk culture is the most agreeable and most reliable form

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in which this organism may be administered. Although there are many good commercial products which are of undoubted merit, some are probably of little value. Some are in the form of concentrated broth culture and others as condensed milk culture. In the present investigation, young milk culture was used throughout.

With the cooperation of some of the doctors in Richmond, the writers were able to investigate the merits of this principle in a variety of cases. The case reports will be given in the order in which the cases were treated. There was little opportunity to follow the results with determinations of the percentage of Gram-positive organisms in the stools, but since this phase has been thoroughly worked over, it was not considered necessary in this investigation. The reports which follow are given to show the clinical results only.

*Subject A.* An 18 year-old boy who was suffering from chronic constipation and who had been compelled to use laxatives since he was quite young. Natural bowel movement was practically impossible; even with varied exercises and purgatives movement of bowels often did not take place for three days or more. He was placed on acidolphilus milk treatment, using at first one quart per day. A stool was obtained with a purgative one day prior to the taking of the milk and it showed about 25% gram-positives. On the second day, the dosage was increased to one quart of milk plus 100 grams of lactose and this amount was continued for seven days. There was no result at the end of this time, not even noticeable gas, which was not a normal result after the taking of lactose. On the seventh day, he used a large enema, and then continued taking the milk and lactose. Three days later, the dosage of milk was increased to two quarts of acidophilus milk plus 200 grams of lactose and other food discontinued. This was used for 10 days before any trace of gas was noticed, but beginning on the 11th day, two soft, yellow stools were passed for twenty days with the exception of five days when only one stool was passed on each day. Subsequently, two soft stools per day were passed, even when the dosage was reduced to one quart of milk and 100 grams of lactose per day. At the end of this time, 225 grams of lactose without the acidophilus milk were taken with equally good results for three days, after which the stools became hard and dark. This amount of lactose was continued for six days, with only one hard stool passed during that time. The subject discontinued because of leaving the city. Although the results in this case were not obtained until after twenty days, and the good effects were not continued after the acidophilus milk was discontinued, the use of it plus lactose in large quantities at first, and then in smaller doses, did accomplish an effect more desirable than that given by purgatives and enemas. The movements were normal and the stools soft, yellow and non-offensive, showing that a condition approximately that of a baby's stools had been accomplished. If this subject had continued taking the milk and lactose, the normal movements would probably have continued.

*Subject B.* A middle-aged man who is father of Subject "A," and who suffered from a condition similar to that of Subject A, but in more exaggerated form. He had taken purgatives for so long that they had ceased to have effect, and enemas were his only source of relief. He would not have a movement for as long a time as ten days or two weeks when under circumstances not convenient for taking enemas. He had not had a normal movement for ten years.

One quart of milk plus 100 grams of lactose were given daily. By the third day considerable gas was noticed, and to get relief, he took an enema. After taking another quart of milk with lactose, he had three, soft, copious, loose movements within about two hours. After this, two, but sometimes only one, large, soft yellow, stools were passed every day as long as the milk and lactose were taken. His general condition was much improved, and he had a great deal more energy, and was more alert. While constipated he experienced periods of dullness, especially when the defecations were not made often. Because of the inconvenience of obtaining the milk and the necessity for taking it during the day, the subject became interested to know when the treatment might stop. Consequently, it was decided to take the milk and sugar only every other day and see if the good results would continue. As soon as one day's treatment was missed the good effects stopped, and although the usual amounts were again resorted to, only moderately good results were afterwards obtained. In fact, the stools obtained

after this were small, and usually hard, but they were spontaneous. After ten days, the subject became discouraged and stopped treatment altogether.

*Subject C.* A young man who was suffering from colitis, with bloody mucus. He had failed to get relief from various treatments, irrigations bringing only temporary relief, and then not complete. He was given one quart of acidophilus milk plus 50 grams of lactose. After the second day the bloody mucus had disappeared and the feces became softer. This condition continued for four days, or as long as the milk and sugar were given. In order to determine the effect of alternating treatments the milk was not given for one day. There was a return of the bloody mucus, but this was stopped next day when the milk and sugar were again taken. The stools then became very soft and yellow, similar to baby stools. After that he abstained from meat entirely and had no further trouble. On one day the stools were very numerous, about eight during the day. Since this condition was not desirable, the milk was discontinued and lactose alone given for two days, with good results. The patient was in such good condition that he stopped treatment altogether. After four weeks, there had been no return of the colitis symptoms and bloody mucus and the patient was in very good condition generally.

*Subject D.* A middle-aged man who had had constipation nearly all his life. Purgatives gave temporary relief, but they did not relieve indigestion.

One quart of acidophilus milk without lactose was administered daily. On the second day he passed a large, soft stool. With the exception of two days, one large, soft stool was passed daily during the twelve days the patient was under observation. During this time, he had gained 4½ pounds, his appetite had increased and he felt better generally. The laxatives he had been taking did not do as much good and their effect was not followed by such results as those obtained from the acidophilus milk. After twelve days' treatment, he returned home and one quart of milk was sent him daily (5 hours by railroad) for one week, during which he continued to derive the same benefits. His condition continued good after the milk was discontinued.

*Subject E.* An old woman (64), who had been using laxatives for a long time, and whose bowels had not moved naturally for a number of years. The laxatives had ceased to have their usual effect when taken in the usual quantities, and it became necessary to use double the quantity. These large doses made her sick. She was placed upon the acidophilus milk treatment and responded readily after taking one quart. Two soft, copious, stools were passed on the first day, but on the second only one. The quart of milk was then taken on alternate days, but later the dosage was reduced to one pint per day with equally good results, one and two stools per day. The good results continued for at least two weeks after treatment had been discontinued.

*Subject F.* A middle-aged negro woman who was constipated and had headache, dizziness and indigestion, and who got only temporary relief from purgatives, was placed on acidophilus treatment, taking one quart per day. After taking a quart per day for four days, the dosage was reduced to one pint per day with continued good results, practically the same as with the larger quantity. The stools were large, soft and yellow and typical of baby stools. The headache and dizziness entirely disappeared and the patient stopped taking the milk after eighth day. After two months, the patient still continued free from constipation.

*Subject G.* A young woman chronically constipated whom purgatives relieved regularly was given treatment which consisted of the taking of one quart of acidophilus milk daily for eight days. Relief was obtained the second day, and she continued to pass soft, yellow, stools each day. She stopped taking the milk because of having regular movements daily, and has continued to maintain this regularly, even after weeks without the milk or other purgatives.

*Subject H.* A middle-aged woman who was suffering from chronic constipation, as a last resort took acidophilus milk. Feces were hard and black, and enemas had been necessary for bowel evacuations. If the patient was not relieved in some way, severe headache followed. One quart of milk was taken on the first day, and one quart of milk plus fifty grams of lactose taken daily thereafter. Since there was no reaction by the third day,

she resorted to an enema to relieve her headache. Following this, the patient had eight, soft, yellow stools, and was somewhat nauseated. The amount of milk was reduced to one pint and no lactose was given for four days, then ¾ of a quart with fifty grams of sugar was given. Soft stools were passed daily, sometimes two large stools. These showed a large percentage of Gram positive rods, a very great increase over that shown before the milk was taken. Three days later, the amount was increased to one quart plus fifty grams of lactose and this continued for 22 days. At that time, the milk was incubated too long for two consecutive days and the acidity was so objectionable that the patient complained and came to dislike it. Even when the acidity was again normal, the milk did not seem to give as good results as before. The patient seemed to think that aside from palatability, the milk did not have as good an effect and she stopped taking it. Her former condition recurred soon after the milk was discontinued.

*Subject I.* Middle-aged woman who had been constipated for ten months, due, presumably, to lack of exercise. Laxatives did not relieve consistently and were very sickening. Three-fourths of a quart of acidophilus milk were given to her for two days without any result. Fifty grams of lactose were then added to this amount, and on the following day the patient passed one large, soft stool which was the first easy movement she had had in months. After two days, the patient complained of nausea following the taking of milk. The lactose was omitted for two days, on the first day of which two soft, copious stools were passed, but on the following day the patient became constipated again. The lactose was again added, and soft, normal stools were obtained, from two to four being passed each day. The patient felt much improved, and continued improving during the treatment, so much so that the dosage was reduced to one pint per day plus fifty grams of lactose; similar good results were obtained with this small quantity as with a quart. The patient reverted to her former condition when treatments were stopped.

*Subject J.* A young woman who was suffering from arthritis, presumably caused by autointoxication, and who had been constipated for a number of years, and had become dependent on laxatives for relief. Three-fourths of a quart of acidophilus milk was given the first day, followed by one quart plus fifty grams of lactose daily. The milk was quite nauseating, and little change was noted in the character of feces or flora of same within five days. The stools became softer, but never approached the state observed in the preceding cases. The symptoms of arthritis did not decrease and no improvement was noted in the patient after twenty-four days, even though 100 grams of lactose were added instead of fifty grams during the last ten days. The patient was given every variation of the treatment feasible except enemas with cultures of the organism. The bowels were sufficiently open to allow free passage of waste products, but for some reason the symptoms did not diminish during the whole period.

*Subject K.* An old, colored man who had suffered from chronic constipation for a long time and also had arthritis, arteriosclerosis and autointoxication. He had been taking laxatives for some time, without much improvement.

He was given one quart of acidophilus milk daily for five days, and had one and sometimes two movements per day, but they were rather hard. One hundred grams of lactose was added to a quart of the milk each day, and he passed two soft, yellow stools on the first day after taking it. He stated that he had less of the feeling of binding around the heart and that his vigor was improved. He continued this for twelve days, when it was stopped to see if the effects were lasting. It was found that after a few days he again became constipated. A commercial product (a mixture of lactose and dextrin) was on hand for trial and was given him according to directions on the container. The patient reported almost as good results from this as from the acidophilus milk. A commercial preparation of B. acidophilus (condensed milk culture) was then tried in the same way, and he seemed to improve quite as well with the other two products. With all three he was relieved in a large measure of the symptoms of arteriosclerosis and seemed much benefited in general health.

*Subject L.* An old woman who had suffered from diarrhea for about eight months, without relief from the treatments employed, as a last resort was placed upon the acido-

philus milk treatment, taking one quart of milk daily without lactose. On the third day, there was improvement in her condition, and she continued to improve rapidly until she left the city, 8 days after starting the treatments. The patient was more improved than she had been under any of the treatments previously employed.

### Discussion and Summary.

The principle upon which the therapeutic use of Bacillus acidophilus is based is both logically and scientifically sound. Implantation in the intestines of an aciduric organism of intestinal origin will displace, in large measure at least, the harmful putrefactive types. Such a condition, since it brings about a simplification of the intestinal flora and substitutes helpful bacteria for harmful ones, is most desirable in the alleviation of certain chronic intestinal disorders. This change in bacterial flora can be brought about in two ways: by encouraging the aciduric organisms already present in the intestines, by supplying the proper food, and by administering living cultures of such organisms. The former method is best accomplished by the ingestion of lactose or dextrin; while living, viable cultures in milk or broth when taken in rather large amounts will produce the same effect more quickly and with less discomfort.

In the present work, young milk cultures of B. acidophilus were used for this purpose, Simplification of the flora was accompanied by a distinct improvement of the condition of the patients in almost every case. Chronic constipation and colitis were treated with success in every instance. A very marked improvement in the diarrhea case was noted after eight days' treatment; in all probability complete relief would have been effected if it had not been necessary to stop the treatment. The one case of arthritis treated did not respond to protracted use of the acidophilus milk, even when supplemented with lactose. In all probability, the condition was not due to autointoxication as was at first suspected.

The cases reported above show a variety of conditions which had not responded well to other treatments, but which were definitely alleviated by the acidophilus milk treatment. There is, therefore, a definite place for such a therapeautic agent as Bacillus acidophilus in the general practice of the physician.


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*Medical College of Virginia.*

## TREATMENT OF ECLAMPSIA.*

By J. L. EARLY, M. D., Saltville, Va.

There are some physicians who state if certain measures are carried out eclamptic convulsions would cease to exist. Certainly, except in a small minority of cases, it is a preventable condition. However, regardless of the fact of whether it can be prevented in all cases or not, we do admit that it is almost never seen in the ante-partum cases of a maternity hospital or in private practice where conscientious observance of the patient is the rule and where they faithfully follow the directions of their medical adviser.

The ones who do "get by," so to speak, are the fulminant cases of hepatic toxemia with no edema, little change in the composition or output of the urine, and with convulsions following shortly on the onset of nausea and vomiting, headache or visual disturbances.

Eclampsia occurs most often in the latter part of gestation, less often during labor, and least of all in the puerperium. Its frequency has been variously estimated from 1 to 250 or

*Read at the meeting of the Southwestern Virginia Medical Society at Wytheville, September 13 and 14, 1922.

1 to 500. The high blood pressure, headache, edema, nausea, vomiting, diminished urinary output, aside from the urinary findings of albumen and casts in the urine, are sufficiently indicative of pregnant toxemia. Physicians should not have the slightest difficulty in reading such a picture. Social workers in tenement districts and the much maligned midwife, with her all too short periods of instruction, have been known to at once recognize the conditions.

We have all had cases of eclampsia in our practice and in most cases, at least, we must admit the following:

We did not see the patient until the trouble developed, as frequently occurs in country practice.

We did not watch the cases as we should.

The patient did not apply for treatment until the toxemia was developed; she neglected or refused to carry out the simplest preventive or curative measures, would not report for observation, failed to send specimens of urine for analysis, neglected bowels or indulged in high nitrogenous food or alcohol or both.

The above facts being so true the preventive treatment is all important. The treatment may be divided in preventive and curative.

### Preventive Treatment.

Thousands of pregnant women are unobserved until at or near the date of confinement. This is not only true in private practice, but in maternity hospitals as well. How often are we all called to see confinement cases and find that this is the first time the woman has given her medical adviser a chance to observe her condition, and we have been denied the opportunity of applying any preventive treatment?

Hence, a long step forward in the prevention of eclampsia is the attention that in the last few years has been directed to the importance of prenatal care of women, especially of the poorer classes for the purpose of reducing infant and maternal mortality.

The cardinal symptoms of eclampsia are, rapid pulse, high blood pressure, anorexia, gastro-intestinal disturbances, mental and physical lassitude, headache, decrease of all excretions, both solid and liquid, all either gradual or rapid. All pregnant women should be considered possible candidates for eclampsia and should, as soon as pregnancy is established, or certainly as soon as any of the foregoing symptoms appear, place themselves in the care of their medical advisers, and monthly or bimonthly examinations of the urine should be made.

In addition to the above, something more is needed since non-albuminic eclampsia exists in 9 to 16 per cent. of cases and is even more fatal than the albuminic cases. We should watch for signs of kidney inadequacy, a circulation surcharged with poisonous material and manifesting itself by high blood pressure, headache, dizziness, gastro-intestinal disturbances. Hence, the blood pressure should be taken at regular intervals, depending on how rapidly it rises. I have found in my practice that if the blood pressure is kept below 150, there is, as a rule, no danger, but any arterial tension above that is dangerous or approaching the danger line. Given a woman with the foregoing symptoms, the following treatment is suggested and should be pushed according to the severity of the case.

First: The amount of nitrogenous food should be diminished to a minimum.

Second: The production and absorption of poison in the intestines and body tissues should be limited and their elimination aided by improving the action of the bowels, kidneys, liver, skin and the lungs.

Third: The source of fetal metabolic products and peripheral irritation in the uterus should, if necessary, be removed by emptying the organ.

In cases where the kidney is involved only in a mild degree, the patient should be put to bed in a light airy room, and nothing allowed but water to drink.

The reduction in quantity of nitrogenous food is best met by an exclusive milk diet. If in three days improvement is noted, milk is allowed and, upon further improvement, starches are added to the diet followed by proteid vegetables and vegetable oil and butter. On progressive improvement a free vegetable diet, milk and one egg a day are permissible. Later, a little chicken or turkey may be added, but never a free meat diet. Spices, tea, coffee, alcohol, beef, veal, mutton and pork are strictly forbidden. Water in abundance may be given unless the heart is overloaded.

I wish to emphasize the exclusive milk diet in the beginning as it is much easier to increase the food than it is to have to go back to milk alone. Any case showing certainly marked toxemia should be started on milk.

One may increase the excretion from the skin, bowels, kidneys and lungs. A brisk saline purge should be given at the start, followed by vegetable cathartics since continuous administration of the former is said to have a tendency to produce headache and anemia. Water is given both night and morning on an empty stomach and is both a laxative and a diuretic. Diuresis is favored by the ingestion of large quantities of liquids, especially hot water. This, in combination with an exclusive milk diet, rarely fails to produce polyuria.

Woolen garments should be worn even in the summer season. If the toxemic symptoms are urgent, a hot wet pack may be ordered twice a day, but patients with weak hearts have been known to die in a hot pack, so the heart should be watched carefully for signs of failure.

Some authors condemn sweating, claiming that it is too depressing, that it concentrates the poison in the blood, and that the amount of poison eliminated is negligible. In my experience, I feel that I have gotten very little benefit from sweating.

Very few drugs are indicated. In mild cases, I have used buchu juniper and with good effect, but believe the drinking of larger quantities of water probably did them more good than the diuretics.

Should the above treatment not have the needful effect, should evidences of renal inefficiency increase, or should the signs of real nephritis appear, the induction of premature labor is not only justifiable but imperatively indicated.

### Curative Treatment.

The time-honored principles of curative treatment of toxemic convulsions are: *First*, the control of the convulsions; *Second*, the elimination of the poison; *Third*, the termination of the pregnancy.

Eight to ten per cent. of eclamptic patients will die, no matter what treatment is used and eighty per cent. will recover under a conservative treatment which does not include shock producing drugs or an operation. The treatment as applied may be aptly divided into the ultra-radical, who believe in incision of the cervix, difficult forceps application, and abdominal cesarean operation; and the ultra-conservative who rely on morphine and eliminants.

I believe a course between the two or a reasonable conservative treatment is best. So long as eclampsia is a mystery, a disease of theories, no treatment is applicable to all cases.

We cannot individualize all our cases, toxemia being the underlying cause whether from liver, kidney or acidosis.

In a particular case an ultra-conservative treatment might cause more harm than an ultra-radical tratment and *vice versa*. The ultra-conservative treatment might be accepted by all if it were not for the fact that the shorter the interval that elapses between the first convulsion and the emptying of the uterus, the better the prognosis for the mother and baby.

Given a case of convulsive toxemia, a half grain of morphine should be given hypodermically, the patient placed in bed in a darkened, well ventilated room. Quiet and fresh air are very essential. Chloroform, nitrous oxide and ether are to be avoided if possible but, if any are used, ether is to be preferred.

Long continued use of any anesthetic lessens the patient's chances. A catheterized specimen of the urine is obtained for examination. The stomach is washed out with a sodium bicarbonate solution and about two ounces of magnesium sulphate solution is injected through the tube before it is withdrawn and allowed to remain; some prefer castor oil and in desperate cases three or four drops of croton oil in sweet oil may be inserted. A colonic irrigation with a solution of bi-carbonate of sodium is also given.

Morphine is repeated in doses of 1-6 to 1-4 grain as is indicated, trying to keep the respirations between ten and twelve per minute. Glonoin is used as a diuretic and anti-eclamptic, the latter indication being fulfilled by lowered high blood pressure. A full dose of sodium bromide in solution is given by rectum in extremely nervous cases. Some use chloral hydrate but sodium bromide will usually suffice and is not so dangerous.

Blood letting is used and in some cases I have thought it beneficial; in others it did no good and possibly harm. In cases where the convulsions recur frequently in spite of treatment, in which the pulse is full and strong, the face flushed or cyanotic, bleeding will do good. In cases of opposite type, it is a procedure of doubtful utility. It should, if possible, be reserved until after delivery as a hemorrhage at birth may make further bleeding unwise.

I have always been disappointed in the use of veratrum viride and have practically quit using same. Some place great reliance on it. With a strong rapid pulse it offers great benefit, the pulse rate being lowered by the drug. Convulsions are unknown when the rate is 60 or under. The patient should be kept in the recumbent position while it is being used. In my cases it apparently increased the shock.

Sweating is obtained by the hot pack with symptoms of heart failure carefully watched.

A multipara with no obstruction and with prospects of a comparatively short labor is a good patient for the conservative morphine eliminative treatment. A primipara with slowly dilating cervix and possibly 20 hours' prospective labor is not such a good risk, and unfortunately convulsions are more often seen in them.

The treatment of convulsions, as above outoutlined, is practically accepted by all obstetricians, except in minor points, but whether the pregnancy should end spontaneously or by artificial means has caused endless discussion. Opposed to the conservative plea as previously mentioned is the fact that the shorter the time which elapses between the first convulsion and the termination of the labor, the better the chances for the mother and the child. While on the other hand eclamptic patients make the worst surgical risks, owing to shock from operation and shock from cardiac depressants like veratrum viride, phlebotomy and over-sweating.

If under a conservative treatment the toxemia steadily grows worse, the labor should be terminated as soon as possible, both from the standpoint of the mother as well as that of the baby; more of the latter are saved if the condition is not prolonged.

The method of delivery depends on many things: period of pregnancy, environment of patient, state of cervix, skill of operator and complications such as a contracted pelvis, placenta previa, etc.

Before the seventh month all babies die, so enough dilatation to do craniotomy and extraction is all that is necessary. After the seventh month efforts should be made to save the child as well.

If the cervix is dilated and the head engaged, delivery is accomplished at once by forceps. If the head is not engaged at the brim, version should be done. If the cervix is shortened and a comparatively thin elastic border remains, it can be dilated with the fingers or some of the metallic dilators, labor being terminated by forceps or by version. Sometimes in hydramniotic cases or in twin pregnancy, rupture of the membrane and escape of large quantities of the amniotic fluid will lessen the convulsion. The beneficial effect obtained from the removal of the child and uterine contents seems in many cases to be a pressure relief, pressure on the kidney, renal vessel, intestines, portal circulation or liver.

Until we know more of the cause of eclampsia, abdominal cesarean section will always demand a place in the treatment. Given a primipara with a long bottle necked undilated cervix and 20 to 36 hours of possible labor before birth, abdominal cesarean section must be considered. Certainly twenty to thirty minutes' operation as compared to 20 to 36 hours of labor, terminated by high forceps and traumatism, is the better chance and offers the best results to both mother and child.

In pregnancy, during the first stage of labor, the barrier offered too rapid delivery is the undilated cervix and it is just here that many obstetricians differ in their method of procedure.

Expectant or palliative treatment in many cases will be followed by death of the child and in about one-third of the cases the mother succumbs. The popular method of the present day seems to be the mechanical dilatation of the cervix and prompt extraction of the fetus. This method is all right if it can be done in a safe period and without damage to the uterus.

Certain cervical conditions may exist, as previously mentioned, which prevent mechanical dilatation in a reasonable time or result in great damage to the lower uterine segment.

During the delivery of eclamptics, as strict asepsis as is possible should be observed, because they are particularly liable to infection, the liver and kidneys being weakened and their immunizing power lessened.

In conclusion, I wish to make a plea for more work along the line of preventive treatment since the convulsive stage is attended by a high mortality of both mother and child, no matter if she has the attention of a most skilled obstetrician. If all women, and particularly young women, would present themselves to their medical adviser as soon as pregnancy occurs, many cases of convulsive

eclampsia could be prevented and those cases which are not responding to treatment could be terminated early in pregnancy before serious damage has occurred.

## RELATION OF A MEDICAL EXAMINER TO A LIFE INSURANCE COMPANY.*

By J. H. DUNKLEY, M. D., Roanoke, Va.

In the various phases of the life insurance business, the Medical Examiner holds a most important position. As it is impossible for the Medical Director to personally examine every applicant, he must delegate that duty to the examiners in the field, and on their examination depends, not only the acceptance of the risk, but also in a measure the mortality experience of the company. The relation of the Medical Examiner to the company is, therefore, a most important one, and upon the manner in which he performs his duties depends in a very large measure the success of the company.

The ideal Medical Examiner, in addition to proficiency in professional skill should be a good judge of human nature, must be endowed with an ability to use such tact as will enable him to elicit from the applicant all information that would in any manner bear upon the assumption of the risk, and must, above all, be possessed of a sense of moral duty to the company that cannot be changed by any prospect of personal profit. In making the examination, his duty is to obtain the facts relating to the physical condition, family history, environment, habits, and morals of the applicant, that the Medical Director when the report is received, may have as full a history of every phase of the applicant's life that would in any way affect his insurability, as he would if he had made the examination himself. To obtain these facts, and to fulfil the purpose of the appointment, his inquiries should not be limited to those set out in the examination blank furnished him, but should take the questions there given as suggestive of the facts sought, and should augment the examination by pursuing these questions in detail in order that his report to the company may be a picture of the risk as full and complete as the nature of the case will admit.

The blanks furnished by the company give only an outline of what is necessary in order that the Medical Director can have a pen picture of the applicant, and the examiner must remember it would be impossible to cover every point in the blank furnished, especially the details of every point necessary in the intelligent passing on the risk. Therefore, he should always not only depend upon the answers given to the several questions on the blank, but if, from the appearance of the applicant, or the answers given to the questions, or from the manner in answering the questions, he is led to feel that the questions do not bring out all the facts in the case, he should either add to those questions, or under space for remarks, give full details, or by a separate communication convey to the Medical Director his impression as to the physical and mental condition of the applicant. He must also remember that if his examinations are carefully made, his impressions fully given, it will not be necessary that he be called upon to secure additional information; also bear in mind that any information given or any suggestions made are held in strict confidence. As most examiners are now aware, the company has many sources from which they can secure information, and if such information is not brought out in the examination or by the examiner, correspondence and extra service is required.

The benefits to be derived from an examination of this nature as supplemental to the questions contained in the examination blank cannot be lightly considered. This is especially true in instances where the applicant is trying to conceal his real physical condition in the hope that he will be accepted. A close scrutiny of the applicant undoubtedly, in many instances where fraud is attempted, will suggest the existence of disease, which suggestion, if followed might result in the rejection of the risk, and in saving the company from paying a claim on an impaired life.

It sometimes happens that after the Medical Examiner has strongly recommended an applicant as a first-class risk, the application is declined and, inasmuch as the reason for such adverse action cannot be disclosed, the examiner should not be unduly concerned on that account. There are so many sources of information available to the company, besides reliable statistics bearing on the case that this action is occasionally necessary and the examiner cannot be expected to acquaint himself on these points. If after obtaining answers to all questions on the blank and supplement-

*Read at the meeting of the Southwestern Virginia Medical Society at Wytheville, September 13 and 14, 1922.

ing the answers thereon with whatever he thinks of importance, the examiner carefully makes his recommendation it will be fully considered with all the other facts bearing on the case.

At the present time no business is making greater progress than life insurance, nor is any receiving more attention from the general public, consequently the various companies have found it necessary to get closer together, and for their mutual protection are exchanging information regarding all branches of their business. This requires keeping many and careful records relating to the applicants, agents, and Medical Examiners, rating particularly the services of the latter as to their ability and conscientious work, and their desire to build up the company by helping the agent, or safe-guarding the company's interest in any way. By helping to build up the company, they not only assist the agent and increase their own practice, but they also assist their community by encouraging thrift.

There are many determining factors to be considered in the selection of any insurance risk. Among them, and perhaps the main ones are: Age, Occupation, Habits and Morals, Build, Family History, Personal History, and Physical Condition. It must be understood in assessing the value of any one of these, the Medical Director must give consideration to the modifying influences of other conditions, and that he must have the cooperation of the Examiner. Age as a factor must be viewed intelligently and the quality of the risk determined by the family history, medical history and physical condition. In the functional and physiological decline of life, persons are more prone to degenerative diseases such as carcinoma, arteriosclerosis, chronic nephritis, and others; hence, the value of an intelligent survey of the problems affecting a risk at different ages. The functional degenerations that come in later years are often concealed and require careful physical examination to detect them. I refer particularly to the cardio-vascular renal diseases. Blood pressure taken properly, especially the diastolic pressure, is one of the best methods of detecting a concealed impairment due to vascular and renal trouble; therefore, when the blood pressure is other than normal, the Examiner should immediately, either by questioning the applicant, or by taking into consideration information already given by the applicant, do his best to locate or determine the cause for the abnormal blood pressure.

The effects of occupation on the health of the applicant should be given careful consideration, and especially if he is engaged in an occupation where he is exposed to certain chemicals, extreme heat or cold or to weather conditions, any effects that could be had on the prospect should be carefully observed and any indication of a breaking down at any point from such exposure should be noted. Also, in asking the question as to occupation, the Examiner should at all times try to ascertain if the prospect is engaged in more than one occupation and, if so, specify how much time is given to each.

The moral hazard is one that is very often overlooked. If the Examiner resides in the same locality, and he generally does, he should endeavor to call to mind any incident, however small, that may have come under his observation as to the applicant's mode of living, his surroundings and his personal standing in the community. It was hoped that the prohibition of spirituous and malt liquors would remove the questions as to the applicant's habits in respect to his indulgence in that direction, but under present conditions, in many localities, it has added to the Medical Director's burdens. Therefore, the Examiner should question the applicant closely as to his indulgence at the present as well as in the past. If he has been addicted, he should be carefully examined for any indications of any effect such indulgence may have had on his physical condition.

If the family history shows a tendency towards certain physical conditions, the examiner should be very careful to look for such in the prospect. The family traits are important in determining the hardiness and longevity of an individual. When a Medical Director notes that an applicant's parents are dead at an early age and that they died from some chronic functional disease, that his grandparents died young, he must be impressed with the fact that the applicant's tree indicates short life. I am not referring here to the question of inherited diseases, because they are few, but rather to the biological conditions of mankind that are hereditary and count as a factor in longevity. We cannot deny inheritance of stature, of appearance, functional similarity, racial type, and mental and nervous traits. We cannot deny the in-

heritance of form and tissue that do not furnish sufficient resistance to avoid certain types of functional diseases. As an example, certain nervous diseases and manifestations are known to develop in particular families in succeeding generations. Among these are chorea, migraines, asthma, epilepsy, hysteria and other psychoses, and functional degenerative diseases, such as diabetes and cardio-vascular renal disease.

The question of overweight or underweight is one where the Examiner can be of great aid to the Medical Director in passing on the risk by questioning the applicant closely as to the family characteristics on this line, and while it does not always follow that if it is shown that the members of the applicant's family are either over or under the average, that the applicant should be either over or under the average, at the same time, there is no question that it helps if the facts are brought out.

The medical history of an applicant is the next important factor, and is perhaps one of the most difficult things to interpret in our review of examinations as we receive them from the Examiners. Too often the Examiner does not understand the necessity of delving into the medical history of an applicant and, therefore, his indifference leads the applicant to forget that he had been subject to a certain type of ailment in the past that might have an important bearing upon his condition, as a standard risk.

There are other points in connection with the physical condition which might be mentioned at the present time. It occasionally happens that an examination discloses an impairment of the heart, lungs, stomach, or some other organ. Now that the majority of companies are handling sub-standard business, it is possible to give quite a large number of such impaired risks insurance at increased rates, and this also includes those whose personal history shows that they have suffered with rheumatism, asthma, renal or hepatic colic, appendicitis, and such major surgical operations as removal of kidney, gall stones, gastro-enterostomy, etc. But it is necessary in these cases to give the very fullest information. An insurance company now-a-days does not fear an impaired risk, but they do hesitate over incomplete information suggesting an undisclosed impairment.

In the foregoing, I have tried to show how important the work of the Medical Examiner is, in fact, how vital it is to the progress of the company. If the present high standard is maintained by them, the company will continue to show a favorable mortality, thereby strengthening their position which is for the benefit of all. If the bond between the Examiner and the company can be drawn closer, it will undoubtedly mean much to both.

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## PREVALENCE OF UNSUSPECTED CHRONIC MAXILLARY SINUS INFECTION.

By E. TRIBLE GATEWOOD, M. D., Richmond, Va.

INCIDENCE OF LATENT TYPES. SEQUEL TO MANY CHEST INFECTIONS. RELATIVE VALUE OF DIAGNOSTIC METHODS.

The object of this paper is to emphasize the present day prevalence of chronic maxillary sinusitis accompanied by obscure symptoms which are frequently overlooked in the search for foci of infection.

INCIDENCE OF CHRONIC LATENT TYPES.

The word "latent" is used to denote those infections that do not stand out with the usual frank symptoms, but rather assume the obscure type of antral disease. The incidence of this infection is found to be rather high if a diligent search is made, due, in part, no doubt, to the recent epidemic of influenza in which the nasal accessory sinuses appear to be peculiarly vulnerable.

In recent years the extensive employment of roentgen ray examination has emphasized the frequent occurrence of dense antral shadows which showed by further investigation to be the result of infection.

Many infections can be traced to improper extraction of teeth with its aftermath treatment. The Mayo Clinic has recently reported 100 cases of such origin. The careful exodontist, however, discovers a large per cent. of these cases that present themselves for examination, when, in reality, the teeth are sound and are only secondarily irritated by close proximity to the inflamed antral membrane.

The present day swimming pools, especially during the epidemics of acute upper respiratory infections, have been a frequent source in disseminating this infection in the cities.

The increasing desire of the laity is to avail themselves of a general physical examination, at which time they usually pass through the office of a rhinologist who does not consider his

work complete, without at least, a thorough inspection of the sinuses checked by X-ray plates, and considered only when correlated with the patient's local and general clinical findings.

### Sequel to Many Chest Infections.

The importance of these chronically infected cavities lies in the constitutional or remote symptoms resulting from them. Many patients make no complaint of localized discomfort whatever, and will frequently give an entire negative history from this standpoint. Complaints of one or more constitutional symptoms, such as arthritis, neuritis, mental, gastric, respiratory or urinary disturbances, have been so constantly present in many of our patients suffering from this type of infection, that I feel we should exhaust every means known to exclude the sinus before charging the symptoms to other sources. While we are not able to discuss in detail all of the various symptoms which so often accompany this malady, I think emphasis should be stressed in regard to gastric and respiratory complications.

It is not definitely understood why a large per cent of patients suffering from chronic sinus infection present themselves for a general examination to the internist with the predominating complaint, "digestive disturbance." The feasibility of this complication may be explained when one considers the effect upon the digestive tract of constantly swallowing pus from an antral cavity over a period of months or even years. It has been shown the number of bacteria in the stomach at any time depends almost entirely upon the saliva swallowed.

Because of the lack of appreciation of sinus-bronchus disease as a common clinical entity, it is desirable to emphasize the following points:

That antral infection and acute bronchitis may develop simultaneously is hardly to be questioned, but the cases that are infrequently recognized are the obscure types, causing no local symptoms, such as headache, pain or appreciable nasal discharge.

A large percentage of patients suffering with chronic bronchitis and bronchiectasis will usually be found to have a sinus infection and the degree of infection is often in proportion to the sinus involvement.

The bacterial flora from the sinus is invariably the same as the sputa.

Many systems of medicine make no mention of sinus infection in connection with bronchiectasis. Mullens, of Colorado, reports fourteen cases, showing lantern slides of radiographs of sinuses and chests. Six of these cases had actually been treated in tubercular sanatoriums. Judging from the number of patients suffering from respiratory infections that are never advised to avail themselves of a sinus examination, it is a question whether the internist realizes the importance of chronic antral infection and its significance in relation to chest diseases.

That sinus-bronchus disease was frequently mistaken for pulmonary tuberculosis in the world war is pointed out by Lawrason Brown in a recent article in *The Journal of the A. M. A.*

The popular idea that such nerves as the optic, musculo-spiral and sciatic are peculiarly susceptible to bacterial toxins may or may not be true, though the enlargement of the blind spot with contracted fields of vision is quite suggestive of a posterior ethmoidal infection. On the other hand, there may be pressure exerted upon spinal nerve roots due to hypertrophic spinal arthritis caused by an unrecognized antral suppuration, which, in many cases, simulates true neuritis or visceral disease.

The author feels safe in bluntly stating there is no one diagnostic method which is conclusive. In a large majority of cases we are called upon to use every means available before being able to announce to our patients definitely the exact condition existing. To find pus in the nasal cavities only suggests a general sinus infection, but not the specific sinus which is all important if one wishes to combat this malady with an earnest scientific desire. To map out the sinus which is infected and those which are not affected requires some little time and study. Very often the patient has not the slightest inconvenience about the head, and inspection of the nasal cavities reveals a normal appearing mucous membrane and surrounding turbinates. These types of cases are seldom seen by the average rhinologist, unless the patient is referred by the internist for special study, as the patient is seeking relief for some remote symptom which is apparently independent of sinus infection, but, in reality the underlying cause.

The common opinion that tooth infections

cause a large percentage of antral infections is, no doubt, true, but one rarely sees in literature that chronic antral infections following repeated attacks of coryzas and grip in lieu give rise to apical infections; this may be especially true when recession of the antrum is deep, contributing to thinness or absence of bony separation.

Relative Value of Diagnostic Methods.

The methods of recognizing antral infections may be summed up in order of their proper study into the following:

Personal history, inspection, palpation, aspiration, trans-illumination, X-ray and irrigation.

*Personal History*: Pain, headache, discharge and fulness over the cheek are the commonest symptoms complained of. This is often of value in determining the probable age of the infection and that some variety of sinus infection does exist. It has been the writer's experience, however, that statements made by the patient are frequently of little importance, since with these obscure infections there is no history of local discomfort whatever.

*Inspection* of the intra-nasal spaces may prove extremely helpful, should there be an abundant expulsion of pus from the antral cavity into the middle meati. On the other hand, the failure to discover anything abnormal by means of inspection, will in no way exclude antral disease. The appearance of hypertrophied lymphoid tissue on the pharynx lying in a vertical streak immediately behind the posterior pillars is invariably indicative of some type of chronic sinus infection.

*Aspiration* is only helpful in diagnosing sinus infection in a general way, but of no help in typing the individual cavities.

*Trans-illumination* is of more help in diagnosing chronic antral infection than any other type of sinus disease. I have learned never to depend upon it alone; an equal shadow means nothing; an unequal shadow only suggests further investigation.

*Palpation* is only helpful in the acute cases, and even here, cannot always be depended upon. Apparent tenderness on firm palpation may prove pronouncedly misleading in the patient of neurotic temperament, who, through fear of being hurt, elicits signs of discomfort.

*Roentgenology* is a valuable supplement to clinical findings, and when so combined, error in diagnosis is reduced to a minimum. To depend upon the X-ray alone in all cases is as wicked as not to depend upon it at all; so obviously is this true that Dr. Frederick M. Law, whose work in this particular field is as luminous as voluminous, has said, "It is necessary to know the history, clinical findings and symptoms before attempting a radiographic diagnosis." I have repeatedly contended that the rhinologist should, at all times, study the plates and correlate the interpretation with the clinical evidence. No matter how competent the roentgenologist may be, or how perfect the technique, there are times when interpretation will be only a matter of opinion, and sometimes an imagination rather than a fact. We have had patients referred for treatment with a fixed diagnosis, based upon the X-ray plates alone, and by further investigation the sinuses proved to be innocent; and again, we have repeatedly operated, basing our diagnosis upon theX-ray findings and history exclusively (knowing, of course, our plates to be perfect in technique). While our series of such cases are not large, we have yet to fail to be supported in our diagnosis by operative inspection, as well as microscopic tissue examination by a competent pathologist. The failure to personally study and visualize from the X-ray films variable anatomic relationship the sinuses hold to other vital structures before operating, is only to invite an occasional disaster to the patient and reproach to yourself. Radiography of the sinuses is a shadow transposition of differential densities of the bones of the skull. and is, consequently, modified by certain diseases and normal variations—such as age, sex, thickness of skull, asymmetry and angle of exposure, all of which must be taken into consideration. In reading antral and upper tooth films, one of the most frequent errors is the interpretation of the relationship the tooth root bears to the antral floor. This fact cannot be definitely stated from the X-ray standpoint alone, for the film appearance is dependent upon the angle at which the film is taken and the position of the tooth root as well as the anatomy of the antral floor, all of which cannot be outlined in detail.

*Diagnostic Lavage*: To prove or disprove the existence of pus macroscopically in the antrum brings us down to the sheet anchor procedure "lavage"; conclusive evidence of active infection can be obtained by the expul-

ion of pus from the cavity, but the failure to observe pus in the washings does not, by any means, exclude infection of a latent type with a definitely diseased membrane supplying the system with a most virulent toxemia. In diagnosing such types of infection, one has to rely entirely upon the X-ray shadow, which is invariably definite, providing the technique is 100 per cent. perfect. Puncturing the antrum as a routine without a definite indication cannot be too strongly condemned; as it, no doubt, occasionally leads to an infection of an innocent cavity, in spite of careful asepsis.

*Antral Exploration*: This procedure cannot be included as a common diagnostic method, for the act in itself prohibits such. There is, however, a very small group of cases that require an exploratory operation before a positive diagnosis is possible. The question arises: "Are we justifiable in such?" Emerson, of Boston, says: "In every case of long standing, polypoid degeneration of the ethmoid labyrinth, operative interference should be followed by inspection of the antrum on that side." I cannot agree with this statement because we know every case of chronic ethmoiditis with polyps is not necessarily accompanied by antral disease. However, if repeated roentgen ray plates are dense and the antral lavage returns clear or with a mucoid substance and accompanied by a history of persistent attacks of either rhinorrhea, bronchitis, asthma, neuralgia or unilateral eustachian infection, we are justified in opening the anterior wall and inspecting the cavity. It is my belief that chronic ethmoiditis is not a constant existing factor in this group of cases. When nasal inspection is negative and patient gives a history of either repeated attacks of vaso-motor rhinitis, unilateral tubal infection, persistent chest signs with negative sputa, or asthma of an undetermined origin, one should consider very seriously latent antral infection. If the patient gives one or more of the above symptoms and the roentgen plate shows a constant density even though the antral lavage is macroscopically negative, we are justifiable in exploring this cavity, with the idea of removing definitely diseased tissue. I can recall cases from my previous private and hospital experience that manifested symptoms and findings as described, that were regarded at that time as innocent organs.

CONCLUSIONS.

That the incidence of chronic antral infection is, for reasons stated, greater than supposed.

That many infected antrums go undiagnosed is because subjective and frank objective symptoms are frequently absent.

That all chronic respiratory infections with a negative sputum call for a thorough sinus investigation.

That roentgen ray plates are of definite diagnostic value only when correlated with patients' clinical findings.

We are seldom justifiable in making a diagnostic puncture of the antrum without first availing ourselves of the necessary X-ray studies.

We are justifiable in making an antral exploration in certain selected cases when all other diagnostic methods are uncertain.

*Professional Building.*

# Correspondence

**Roads, From a Country Doctor's Standpoint.**

TO THE EDITOR:—

Now that it seems settled that there is to be no Bond Issue and that our roads must be built, if built at all, by a "direct tax," why may not our Legislature be called together in extra session and put this "direct tax" directly where it should be, that is on the automobile? The automobile is the thing of all others that has caused all this demand for Good Roads, the thing that is most benefited by Good Roads, and the thing that wears them out after they are built. Therefore, the automobile should pay for the Good Roads.

While wearing one automobile out, I usually succeed in making about money enough to pay for the next one. A new Ford machine costs between $400 and $500 (according to equipment) and, after two years' use in the practice of medicine, "trades in" on the next new one for about $140. And I believe it is conservative to say that repair bills, during that two years, incident to bad roads, are double what they would be if we had improved roads, such as they have in Maryland, for example.

Now, from the above figures I deduce that, if by paying $26.40 annual license tax, instead

*From a recent issue of the Warrenton (Va.) Times.

of $13.20, we could, in a reasonable time, get sufficient improved roads to make the machine last four years instead of two, it would save me money, to say nothing of the comfort of having better roads to travel over.

Recently, the Fauquier County Health Department was abolished because it cost something in taxes to maintain it. The tendency of public opinion, not only in the county but over the State generally, seems to be at the present time to abolish everything that costs anything in taxes. Reasoning along this line, would it not be good economy to abolish the Legislature? Certainly our last session has little to which it can "point with pride" except the things it prevented, or did not do, and no Legislature could do nothing about as effectively as our last session did, and furthermore, would cost the State nothing. Sounds logical, but unfortunately, consistent with good government, there is a limit to this 'tax reducing," "do nothing" policy.

A Legislature, sent instructed to do nothing except reduce taxes, can accomplish nothing constructive, as was practically the case with our last session. The law is an imperfect instrument which needs constant adjusting and readjusting to suit changing conditions. The War, for example, necessitated many new laws and new taxes most of which have been abolished, thanks to our Legislatures, State and National. However, in revoking these laws and taxes which are no longer necessary, it becomes the function of the Legislature to seek a "sane middle ground" and not let the pendulum swing too far in the other direction because, if carried far enough, this policy would result in the abolition of all taxes, law, order and government, or, in a word, Anarchy.

I believe that a majority of our people in Virginia are willing to pay sufficient taxes to build and maintain good roads such as they have in other states, if the taxes are put in the right place.

I am aware that some automobile owners would object to having the license tax increased, particularly those living in the cities. But there is nothing new in this. There have always been some people who would like to have some one else pay all the taxes and, perhaps since the first city was built, the City Dweller has been trying to put the big end of the taxes over on the country man. It is true that city people are taxed by their city governments for the up-keep of their streets but to compensate for this the Legislature releases them from paying the ordinary road taxes that all property owners outside of city limits have to pay. And as city automobile owners are allowed to and do travel a great deal over the country roads, it is but fair that they should pay their proportion of the tax. An automobile owner who prefers to go on running his machine over unimproved roads because the improved roads cost more, is as "penny wise, pound foolish" as the farmer who continues to cut his wheat with a cradle because the binder costs more.

So, I ask again, why not get together and put this "direct tax" where it should be, that is on the automobile? It may not be necessary to double the present license tax, but increase it sufficiently to build and maintain a good Highway System in a reasonable length of time.

The advantage of this tax over the proposed tax on gasoline is that it is more direct and would not work an injustice on farmers, millers and mechanics in purchasing gasoline for their stationary engines, tractors, etc. Also that automobiles propelled by steam or by any other force would not escape the tax.

And any automobile owner who may object to this tax may at any time relieve himself of it very simply—i. e., by getting rid of the autombile.

RICHARD MASON.

The Plains, Va.

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**Human Actinomycosis.**

Mayo Clinic.
Rochester, Minn.
December 7, 1922.

TO THE EDITOR:

I am endeavoring to make a complete study of the distribution of human actinomycosis in this country. The number of cases reported in the literature is surprisingly small, and I know that the disease is not so rare as is sometimes thought. I shall greatly appreciate hearing directly from any one who has had experience with this disease, and desire to know concerning case histories the following: age, sex, occupation, residence, state in which the disease was contracted, location of lesion, duration of symptoms, and any special points of interest connected with the treatment, outcome of the disease, or necropsy findings.

A. H. SANFORD, M. D.

# Analyses, Selections, Ect.

### The Patency of the Fallopian Tubes Ascertained by Transuterine Injection of Fluids.

A paper was read by Dr. I. S. Stone with the above title at the recent session of the Southern Surgical Association held at Memphis, Tenn., December 12, 13, and 14, of which the following is an abstract.

The first trial of the method was made during an operation for acute infectious salpingitis and appendicitis with extensive peritonitis. As it was essential that the patient should not be unsexed, we determined to practice conservation even at some risk. At that period (1896) it was the rule to excise every tube which contained pus and many operators removed both tubes and uterus if pus was discovered in one tube. The right tube and ovary with the badly involved appendix were removed because they were necrotic and hopeless, but the left was not so much damaged and was allowed to remain although it was in the stage of free discharge before the fimbria had closed in and sealed it. The cervix was held with a tenaculum forceps and a large glass syringe was used to inject the uterus and tube. The force used was firm hand pressure upon the piston of the syringe. As the tube lay upon a sponge over the incision, we were pleased to see a fairly good stream of the solution escaping from the distal end of the tube. After flushing the tube thoroughly it was dropped back as is usually done and the wound closed. The solution in the first case was bichloride of mercury 1-1000, but later we relied upon iodine in watery solutions of the tincture 1-2000. Although this practice has been used many times in Columbia Hospital in this city when it was desirable to leave an ovary and tube in some borderline case, not a single accident has occurred and all patients have made easy recoveries. We have also used the method in the investigation and treatment of sterility, having had a complete success in a recent case which had resisted treatment for many years. The patient conceived soon after leaving the hospital and in due time was safely delivered.

The method involves an inspection of the tubes through an abdominal incision, bringing the annexa outside of the incision where they are to be held upon a gauze sponge and the injection given by a competent assistant. In a number of instances we have failed to inject the tube as we could see no evidence of the usual stream or even drops of fluid escaping from the pavilion. It is quite possible that much benefit may follow the application of antiseptics to the proximal end of the tube and isthmus, a region which has hitherto been considered beyond our reach.

### Kidney Function.

Alfred N. Richards, Ph. D., in *Am. Jour. Med. Sci.*, CLXIII, No. 1, January, 1922, p. 1, states that the glomerulus is the chief site of fluid elimination in the kidney. Using apparatus with which it is possible to perfuse *in situ* the kidney of an animal, Richards and his co-workers have brought forward additional proof of the filtration theory as opposed to the "vital" or 'secretory" theory of glomerular function. They contrived to alter pressure within the vessels of the perfused kidney without alteration in volume flow, or velocity of blood. They concluded that the increased urinary flow obtained was, therefore, attributable to raised blood pressure. Richards believes that in previous experiments in which venous obstruction causing increased pressure resulted in *diminution* of urine, the result was due to coincident stagnation of blood in the glomerular capillaries.

It was found that certain constrictor agencies, as adrenalin and pituitrin, in small dosage resulted in greater constriction of the efferent vessels; increase in urine by increased glomerular pressure; swelling of the kidneys by distention of the glomerular capillaries. Large doses of adrenalin result in constriction of both afferent and efferent vessels, and suppression of urine. Again, substances such as water, urea, and caffein, which are dilator, acting first upon the afferent glomerular vessels, and in part passing out of the circulation with the urinary filtrate, result in increased intraglomerular pressure and diuresis.

"If we regard the renal arterioles as very sensitive both to constrictor and dilator substances, as they most certainly are, and if we admit the possibility of such preferential action as I have indicated on either efferent or afferent vessels, we must see in this a very delicate mechanism whereby intraglomerular pressure, and hence the first formation of urine, is regu-

lated in accordance with the chemical composition of the blood."

The number of glomeruli and tubules in the human kidney is estimated at 2,000,000. Not all are active at the same time. Direct microscopical observation of the frog's kidney enabled Richards to study the blood flow through the glomeruli and the effects of various substances introduced into the blood as they affected the number of glomeruli seen to be active at one time. Wide variations were noted in the number before and after the injections, e. g.:

Hypertonic Sodium Sulphate (5 per cent.): 0.1 c.c. Before, 6 active, 0 inactive, total 6; after thirteen minutes, 51 active, 0 inactive, total 51.

Adrenalin constrictor dose, 0.1 c.c., 1 to 100,000: 3 fields; before injection, 49 active; immediately after, 12 active; seven minutes later, 48 active.

Just as all the glomeruli in a kidney do not receive blood at once, so too in a single glomerlus not all the capillary loops need be patent at one time. The flow may also be intermittent. Of two adjacent glomeruli, blood flow may stop in one and not in the other. The interruptions bear no relation to the heart beat. At times, from influences outside the kidney, all or many may stop. But there must also be a local (glomerular) regulatory mechanism, as also of the afferent and efferent vessels. The capillaries within the glomerulus probably have independent contractile power, since the blood corpuscles fade from view after the flow stops. There are evidences of difference in tone of these capillaries. These observations make it easier to understand variations in the composition of urine. Richards thinks albuminuria may occur due to causes not far removed from the physiological, that is. from increase of the normal intermittent cessation of blood flow.

J. H S.

**An Ocular Sign of Syphilitic Infection.**

At a recent clinical meeting at Warsaw, Dr. A. Chelmonski, Revue de Medicine, March, 1922, read a paper in which he described and demonstrated with his patients what he claims to be a new sign of syphilitic infection. Having remarked something unusual about the eyes of his tabetic patients he decided to analyze this expression and determine if possible its significance. At first he thought it might be due to the failure of the pupils to react to light, but this hypothesis had to be abandoned when he made the further observation that the same expression was characteristic of primary and secondary cases.

A careful examination of the peculiarities of these abnormal eyes revealed the following characteristics: Pupils which react somewhat more sluggishly than normal both to light and to accommodation; sometimes an oval outline; the tracery of the iris is smudged, often unequally, in the two eyes and the iris appears to have lost both color and lustre, the latter because the anterior chamber is often extremely flattened. The optic disc is pale and the vessels of the retina may appear narrowed. Of these characteristics the most constant are smudging of the iris and the diminished reaction of the pupils to light and accommodation. (Lancet, London, August 12, 1922).

**The Clinical Evaluation of the Wassermann Reaction.**

Kilduffe asserts that "in the ultimate analysis, the clinical value of the Wassermann reaction is in direct proportion to the realization that it constitutes only a single method or phase of examination and that it should always be carefully correlated with and interpreted in the light of all the other findings—however obtained—in the individual patient."

It is necessary for the clinician to know what antigens are used and the degree of reaction to each. Only in this way can the reports of different laboratories be compared and correlated.

The Wassermann reaction is not specific, conditions generally admitted to give complement fixations with the antigens in common use under certain conditions are leprosy, frambesia, pneumonia, and anesthesia or alcoholism.

While it is true that the Wassermann reaction is the most constant and delicate single symptom of syphilis, it has been abundantly proved that in syphilis a single negative reaction is not sufficient nor definite evidence that a cure has been effected.

In the primary stages of syphilis only a small proportion of cases will react before the third or fourth week.

In the secondary stage about ninety-five per cent. of all cases are positive, and dependence should not be absolute on a single negative in this stage.

In neurosyphilis the blood Wassermann may be negative while the spinal fluid is positive. Bibliography of forty-one references. (Robert A. Kilduffe, Archives of Dermatology and Syphilology, August, 1922.)

**Syphilitic Heart Disease.**

Meza and Paulis believe that syphilis should be suspected in all kinds of heart disturbances, especially since Cesa-Bianchi's recent discovery of spirochetes in the heart in inherited syphilis. Electrocardiography is one of the most reliable means to detect latent mischief of this kind. (S. A. Meza and J. Paulis, Revista Espanola de Medicina y Cirugia, Barcelona, April, 1922; Journal of the A. M. A., August 12, 1922.)

**Progress in Syphilology.**

Cheever summarizes the striking developments (in syphilology) of the past year.

Three cases of syphilitic infection during labor have been reported by Lemholt. Typical chancres developed on the infants' heads, followed by typical acquired infections.

There have been increasingly numerous reports of reinfection.

Pinard and Leguignand report case of experimental syphilis in a man, who inoculated himself three times, producing typical chancres and typical later reactions.

Rasch reports case of girl with lenticular syphilide which failed to appear on the parts of body exposed to strong sunlight. The actinic rather than the heat rays are thought to be responsible.

Cases of neurosyphilis with negative spinal fluid are reported. Spinal drainage is effected without lumbar puncture. Corbus, O'Conor, Lincoln and Gardner inject 100 c.c. of fifteen per cent. saline solution intravenously by the gravity method, six hours later 0.9 gm. neoarsphenamin is injected. The injection of the saline solution causes an initial rise in the cerebrospinal fluid, followed by a fall in this pressure to below zero, followed by a gradual rise to normal. Apparently the increased osmotic properties of the blood plasma causes fluid to be drawn rapidly into the blood stream from all sources, including the cerebrospinal fluid.

Wile and Marshall present an analysis of 1,869 cases of syphilis on whom lumbar puncture has been done. About seventy per cent. of those having pigmentaries of the neck had neurosyphilis, seventy per cent. of those having iritis had neurosyphilis, and fifty per cent. of those having pigmentaries of the neck had neurosyphilis also. About thirty per cent. of the cases of late syphilides of the skin, bones, and viscera, had definite central nervous system involvement.

That the latent syphilitic can be a carrier seems to be indicated by the fact that living treponemata have been isolated by rabbit inoculation from inguinal glands and semen. Klauder and Kolmer found all transudates and exudates positive to Wassermann test—tests with secretions were not uniformly positive.

Reports during the last year by American syphilologists have not been especially favorable to silver arsphenamin.

Hesse suggests that the beneficial effect of sunlight in tuberculosis argues for the same good effect in treatment of syphilis.

Levaditi reports the value of bismuth salts in the treatment of syphilis. Tartrobismuthate of sodium and potassium suspended in oil has been put on the market under the name of trepol.

A recent investigation reports that there is no advantage in mercury inhalation. (Austin W. Cheever, (References), Boston Medical and Surgical Journal, August 10, 1922.)

**The Limitations of Intravenous Medication.**

Read at the Seventy-third Annual Session of the American Medical Association, May, 1922. Voegtlin points out that intravenous medication is not necessarily superior therapeutically to other modes of drug administration, and also that there are numerous possibilities of injury to the patient inherent in this method. In the case of arsphenamin, the intravenous method was chosen in order to avoid local reactions. Author recommends the subcutaneous injection, which by reason of its simple technic, would make it possible to put a larger number of syphilitics under treatment, as many physicians who have not the required experience with intravenous treatment, can use the simpler treatment, if necessary under the general supervision of an experienced syphilologist. (Carl Voegtlin, Journal of the A. M. A., August 5, 1922.)

**The Metastatic Complications of Gonorrhea and Their Treatment.**

Fraser discusses those conditions which are

due to the spread of the gonococcus in the blood stream.

The first essentials in treatment of these conditions are the eradication of the focus of infection, which is invariably found in the genito-urinary tract, and the prosecution of energetic local treatment. Next in importance is the administering of chemotherapy and vaccines. Author recommends intramine and trimine as superior to the proteins used. There is no serious rise of temperature and no acceleration of pulse rate subsequent to the injection of these two drugs, as is the case with foreign protein. In conjunction with the chemotherapy, vaccines are administered. Detoxicated vaccines are of high therapeutic efficiency when given in large and steadily increasing doses at four-day intervals. Vaccine with a high endotoxin content should be administered in small daily doses. (A. Reith Fraser, Journal of Urology, July, 1922.)

**Gonococcus Septicemia.**

The intermittent fever persisted during ten months, unmodified by treatment with colloidal metals, antimeningococcus serum, autohemotherapy and quinine. But it was arrested at once with an autogenous vaccine. The robust man of thirty-five had never presented any skin or joint or viscera complications, and the diplococcus found in the blood could not be cultivated, but the first onset of the fever had been during the decline of acute gonorrhea with orchitis. Bloch and Sergent have each reported a similar cure in a case of meningococcus sepsis. The autogenous vaccine may induce a curative shock, without specific action. (J. Tapie and M. Riser, Bulletins de la Societe Medicale des Hopitaux, Paris, June 2, 1922; Journal A. M. A., August 26, 1922).

**Reinfection with Syphilis.**

Carle discusses the condition under which reinfection can occur. It is becoming more and more frequent every day. He published in 1921 a case of unequivocal reinfection after treatment with mercury alone, and as early as 1901 he had observed a number of cases of reinfection. He here describes two new instances, and reiterates that the biological laws are not mathematical laws; their equations contain imponderables which we are unable to seize. We have all seen secondary phenomena develop six months after the most thorough treatment, and, on the other hand, have seen a new primary chancre develop after most inadequate treatment. We need not despair of the future of the patient even if he has been dilatory in applying for treatment, and we must not discard the idea of a reinfection because we know of the thorough treatment. Another fact brought out by this study of reinfections is that many instances of reinfection must have escaped recognition in the past. In both the cases reported here, the old syphilitics considered themselves safe from new infection. He advises warning against the danger of reinfection, especially when the man is married, to protect the wife. (Carle, Annales des Maladies Veneriennes, Paris, July, 1922; Journal A. M. A., August 26, 1922).

# Proceedings of Societies

## Medical Society of Virginia

(*Continued from page* 542.)

REPORT OF SECRETARY-TREASURER FOR 1921-1922.

Present membership of the Society:

| | |
|---|---|
| Active members (Classes A and B) | 1631 |
| Honorary members | 24 |
| Associate members | 106 |
| Inactive—physically incapacitated | 33 |
| Total | 1794 |

Membership gains during the past year:

| | |
|---|---|
| New members | 85 |
| Reinstatements | 2 |
| Total | 87 |

Membership losses for same period:

| | |
|---|---|
| By death | 21 |
| Resignations | 26 |
| Dropped from rolls | 27 |
| Total | 74 |
| Net gain in membership | 13 |

The Secretary-Treasurer made a report covering the income and expenditures of the Society covering the period January 1, 1922, to October 31, 1922. He was instructed to withhold its publication until the end of the fiscal year, when a complete report for the year could be made.

House of Delegates, November 1, 1922. Dr. E. C. S. Taliaferro, presiding. Roll call and quorum found present. The reports of the Secretary-Treasurer were ordered accepted and filed with the records of the Society with the thanks of the Society. The Secretary-Treasurer reported on the temporary arrangement made with Mr. R. H. Talley, Attorney for the State Society, and his action in the matter was unanimously approved. Informal reports were made on the activities of the various irregular cults in this state and the difficulties encountered by the State Board of Medical Examiners in prosecuting violators of the Medical Practice Act.

Motion, duly seconded, that the House of Delegates approve an increase in the annual assessment of the members of the State Society to five dollars; that assessment to cover in addition to the regular expenses of the Society, legal defense for every member of the Society sued for alleged civil malpractice and also to cover the expected expenses

incident to enforcing the Medical Practice Act. Unanimously adopted.

The Secretary-Treasurer made a report covering the liability losses of physicians of Virginia and other states as drivers of automobiles. Motion seconded, that the House of Delegates approve the organization of a company to carry this insurance for members of the Society and the President of the Society is instructed to appoint a committee with authority to arrange the details of the organization. Unanimously adopted.

The President appointed on this committee Drs. A. L. Gray, Paul W. Howle and M. W. Peyser. A unanimous vote of thanks was given Dr. J. B. DeShazo, Vice-President of the Medical Society of Virginia, for his successful efforts in getting reduced round trip rates to the Norfolk meeting.

Adjourned.

EXECUTIVE COUNCIL'S REPORT.

Paul W. Howle, chairman, presiding. Roll call and all present.

The Executive Council nominates as delegate to the American Medical Association, to succeed himself, Dr. Jos. T. Buxton, of Newport News.

For President, Dr. John Staige Davis, University, Va.

For 1st Vice-President, Dr. E. L. Kendig, Victoria, Va.

For 2nd Vice-President, Dr. C. R. Grandy, Norfolk, Va.

For 3rd Vice-President, Dr. R. S. Griffith, Basic, Va.,

For Secretary-Treasurer, G. H. Winfrey, and fix his compensation at $3,600.00 annually.

For Editorial and Business Assistant, Miss Agnes Edwards, and fix her compensation at $2,200.00 annually.

The Executive Council recommends to the Society the organization of an insurance company to carry the automobile liability insurance of members of the Society.

It recommends that the State Society join in the invitation extended by the physicians of Richmond to the Southern Medical Association to meet in that city in 1923.

It recommends that the State Society endorse the contemplated extra session of the General Assembly for the purpose of issuing the issue of bonds for building roads.

It recommends that the State Society formally request the State Health Commissioner that, if any medical or surgical clinics be held throughout the state, no fee be charged and the names of clinicians not be given in advertisements.

It recommends that the Walter Reed Medical Society be chartered as a component society when the county societies represented in that organization have surrendered their charters and when the members of the Warwick County Society have determined with which society they will hold active membership.

It recommends the reappointment of all standing committees with the appointment of Dr. C. E. Conrad of Harrisonburg, Va., to the Membership Committee in place of Dr. Wm. F. Driver, of New Market, who died last year.

It recommends that the thanks of the State Society be given the Shriners of Norfolk for the use of their Temple, to the Y. M. C. A. (Naval) for the use of its building, and to the citizens and physicians of Norfolk for their generous hospitality to the visiting members of the Medical Society of Virginia.

Adjourned.

GARNETT NELSON,
*Clerk.*

HOUSE OF DELEGATES,

November 2, 1922.

Dr. E. C. S. Taliaferro, presiding. Roll call and quorum found present.

The report of the Executive Council was read. Moved and duly seconded, that the House of Delegates approve the report, nominations and recommendations of the Executive Council. Unanimously approved.

The House of Delegates approves the appointment of a committee to consider Health Problems in Education as requested by the American Medical Association.

The House of Delegates unanimously recommends to the State Society the following to be members of the Executive Council from the state at large: Dr. Isaac Peirce, of Big Stone Gap, Va., and Dr. Lawrence T. Price, of Richmond, Va.

Invitations for the 1923 meeting of the Medical Society of Virginia were received from Roanoke, Va., and the management of the Greenbrier White Hotel, White Sulphur Springs, W. Va. The invitation of Roanoke was recommended for acceptance.

Moved, duly seconded, that the Medical Society of Virginia do some educational work in the state in matters regarding the work of irregulars. Dr. Burnley Lankford, of Norfolk, Va., was appointed a committee of one to draw up suitable resolutions covering this matter, to be presented to the society at its final meeting.

Dr. Lankford submitted the following, which was unanimously adopted:

Believing that the time has come, when in defense of the public welfare the medical profession of Virginia should make known its position with regard to the practice among the citizens of the state of the various cults of drugless and non-surgical healers, and though we realize that in so doing we lay ourselves open to the charge of self-seeking (in the opinion of the unscrupulous and unthinking), at the same time since the regular medical profession has, for a thousand years, stood for the prevention of disease and for the preservation and protection of the public's health, we of the present age and time deem it our duty to let the public know how we stand.

*Therefore, be it resolved, First,* That we, the members of the Medical Society of Virginia, do earnestly deprecate the absurd, erroneous, misleading, and oftentimes fraudulent and injurious claims made by these drugless, non-surgical healers and broadcasted over every community of the state in glaring advertisements. We see every day citizens of our State from infancy to old age grossly mistreated, often at the cost of their lives, by those who are not only absolutely unqualified in training, but who also willfully disregard from ignorance the established facts of anatomy, physiology, pathology and bacteriology, which facts have been established through long years of patient research by men of science, many of whom are known to history as public benefactors, and through the application of which facts, multitudes of lives have been saved and the health of millions preserved.

*Second,* That we plead with parents to investigate carefully the claims of these charlatans and irregular practitioners before subjecting their children to treatment by them, and that we advise all adult citizens to investigate in behalf of their own good, before submitting their own bodies for "treatments" that may do them serious harm.

*Third,* That we have no objection to these healers using any kind of drugless or non-surgical means of treatment, provided that they have had sufficient

preliminary education and have been properly and correctly trained in the fundamental facts of anatomy, physiology, bacteriology and the other time-established branches of the healing art, in order that they may be qualified to judge which cases are suitable for drugless or other method of treatment, and which are not.

*Fourth*, That this Society appoint a committee to assist in drawing up a suitable medical practice act to be presented to the State Legislature, under the terms of which all those who would practice upon the lives and health of the citizens of Virginia must show that they are properly qualified for such important work.

*Fifth*, That the Executive Council be requested to give these resolutions what publicity it may see fit.

Letters form the American Medical Association relative to the Volstead Law and the training of ex-service men as Chiropractors were read to the House of Delegates, and it was moved and duly approved that the House of Delegates recommend to the State Society the adoption of the resolutions as follows:

RESOLUTION ON THE VOLSTEAD ACT.

*Whereas*, The medical profession has been subjected to criticism and unfavorable comment because of present conditions associated with the enforcement of the Volstead law, and

*Whereas*, The results of a referendum conducted by the Journal of the American Medical Association, covering 54,000 physicians, indicates that fifty-one per cent. of physicians consider whisky "necessary" in the practice of medicine, and

*Whereas*, The dosage, method, frequency and duration of administration of this drug in any given case is a problem of scientific therapeutics and is not to be determined by legal or arbitrary dictum, and

*Whereas*, The experience of physicians, as reported in The Journal, indicates that the present method of control, limitation of quantity and frequency of administration, licensure and supply of a satisfactory product constitutes a serious interference with the practice of medicine by those physicians who are convinced of the value of alcohol in medical practice; therefore, be it

*Resolved*, That the House of Delegates of the American Medical Association, in convention assembled, representing a membership of over 89,000 physicians, appeals to the Secretary of the Treasury and to the Congress of the United States for relief from the present unsatisfactory conditions, and recommends that provisions be made for supplying bonded whisky, *for medicinal use only*, at a fixed retail price to be established by the government.

RESOLUTION ON VOCATIONAL TRAINING OF DISABLED SOLDIERS.

*Whereas*, The St. Louis Medical Society, on May 16, 1922, by Memorial and Resolutions, vigorously protested against the approval by the United States government of the School of Chiropractic as a means of vocational training for disabled ex-service men, and

*Whereas*, It appears that more than 250 ex-service men from all parts of the country, seventy of whom represented the Ninth District, composing the states of Missouri, Iowa, Kansas and Nebraska, are now enrolled in one Chiropractic School in this district with the sanction and approval of the United States government; therefore, be it

*Resolved*, That the House of Delegates of the American Medical Association, in annual session assembled, representing over 89,000 legally qualified physicians, adequately trained in the arts and sciences (the only foundation for the recognition, control and prevention of disease), approves the sentiments expressed in the memorial and resolutions adopted by the St. Louis Medical Society, which have been submitted to this House, and hereby directs that the proper officers of the American Medical Association memorialize and petition the Federal government, particularly those officers charged with the responsibility for the rehabilitation of disabled ex-service men, and to take such action in the interest of the welfare of all the people, and also for the protection of those who honestly desire to administer to the sick, to the end that the ex-soldiers seeking vocational training, which will fit them for ministering to the sick and aiding in the recognition, control and prevention of disease, shall, at least, meet the requirements and shall receive such adequate training as is defined in the classification of Medical Schools of the American Medical Association, known as Class A, or acceptable medical schools—a standard which is approved by all right-thinking people moved by a desire for public welfare.

The members of the Executive Council were instructed to send copies of these resolutions to the members of Congress from their respective districts, and the Secretary was instructed to send copies to the two Senators from Virginia and to the respective heads of the departments of the government concerned with the administration of these laws.

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The following amendments to the By-Laws having been submitted in proper form, received the unanimous approval of the House of Delegates and the ratification of the Society at its final session:

Strike out the fourth sentence in Section 1, Article 6, of the By-Laws and amend by substituting the following:

Then all the Districts and the Society at large shall be represented by the several Councillors in person; in the event a councilor cannot be present, he shall designate to the president, in writing, a member from his district or the State at large, as the case may be, who shall represent him at this meeting; and in the event there is no representation, as previously provided for, then such appointment shall be made by the President. Neither any Councilor nor his alternate shall be eligible for any office in the gift of the Society.

Article 10, add section 6:

The President and the Secretary-Treasurer of the Society are directed to see that the time and place of meeting of the Executive Council and the House of Delegates are printed in the program and to see that attendance of the members of these bodies be accurately checked.

The House of Delegates nominates for membership on the Executive Council, Dr. D. H. Mason, Ridgeway, Va., from the Fifth District; Dr. R. L. Page, Batesville, from Seventh District; Dr. Hugh McGuire, Alexandria, Va., from Eighth District.

Adjourned.

FINAL SESSION OF THE SOCIETY, NOVEMBER 3RD.

The foregoing report was read to the Society as a whole, at its final meeting and, it was moved and duly seconded, the Medical Society of Virginia do accept and ratify the reports of the Executive Council and the House of Delegates and also the reports of the committee. Unanimously adopted.

The Membership Committee nominated for honorary membership Dr. A. L. Gray, of Richmond, Va.,

and Dr. E. C. S. Taliaferro, of Norfolk, Va., both former presidents. Unanimously elected.

Adjourned.

EXECUTIVE COUNCIL—FINAL MEETING.

The Executive Council met after the close of the final general meeting and elected the following: Dr. R. L. Williams, Norfolk, Va., chairman; Dr. Garnett Nelson, Richmond, Va., Clerk.

GARNETT NELSON, *Clerk.*

*(To be continued.)*

**The Seaboard Medical Association of Virginia and North Carolina**

Met at New Bern, N. C., December 5-7. In spite of the great fire there, which destroyed six squares of residences, there was a large attendance and the entertainments were most elaborate. The scientific meeting was also one of the best in the history of the organization. The following officers were elected: President, Dr. Joseph T. Buxton, Newport News, Va.; vice-presidents, Dr. William E. Warren, Williamston, N. C.; Cora Z. Corpening, Suffolk, Va.; George A. Caton, New Bern, N. C., and Russell M. Cox, Portsmouth, Va.; secretary-treasurer, Dr. Clarence Porter Jones, Newport News, Va. It was decided to hold the next meeting in Newport News, Va., December 4, 5 and 6, 1923, and plans are already being made in that city toward making this session eclipse any meeting in the past.

**The Southside Virginia Medical Association**

Met in South Hill on December 12th, with a good number of members and visitors in attendance. A very interesting and helpful program was rendered, after which the following officers were elected for the year 1923: President, Dr. W. C. Harman, Dolphin; vice-presidents, Drs. H. M. M. Snead, South Hill; W. T. Gray, Suffolk; F. J. Wright, Petersburg; T. G. Hardy, Farmville; secretary-treasurer, Dr. R. L. Raiford, Sedley.

The local profession entertained the Association at a splendid supper given at Hotel Norden.

The next meeting will be held in Petersburg the second Tuesday in March, with Drs. Mason Romaine and W. B. McIllwaine as leaders of the subject for general discussion.

R. L. RAIFORD,
*Secretary.*

**The Richmond Academy of Medicine and Surgery,**

At its annual meeting elected Dr. J. Allison Hodges, president; Drs. Greer Baughman, J. Fulmer Bright and St. Geo. T. Grinnan, vice-presidents; and re-elected Dr. Mark W. Peyser, secretary; Dr. E. H. Terrell, assistant secretary; Dr. Howard Urbach, treasurer, and Dr. E. C. L. Miller, Librarian. This makes the thirtieth term for which Dr. Peyser has been elected secretary and he served as assistant secretary for two years previous to his election to the office of secretary. This is but a small testimonial of the esteem in which Dr. Peyser is held by his confreres and expresses the appreciation of his most excellent work for the Academy.

The following were elected members of the Judiciary Committee: Drs. A. L. Gray, McGuire Newton, W. H. Higgins, Manfred Call, James K. Hall and P. W. Howle.

**The Warwick County Medical Society,**

At its regular meeting, December 12, elected the following officers for 1923: President, Dr. W. S. Snead; vice-president, Dr. C. B. Courtney; secretary-treasurer, Dr. Samuel Downing, all of Newport News. The following were elected to serve on the Board of Censors: Drs. W. F. Cooper, C. P. Jones, G. J. Williams, T. J. Kagey and J. T. Buxton. Dr. C. P. Jones was elected Insurance Trustee of the Society.

SAMUEL DOWNING,
*Secretary-Treasurer.*

**The Lynchburg and Campbell County Medical Society,**

At its annual meeting in Lynchburg, December 4th, elected the following officers for 1923: President, Dr. F. O. Plunkett; vice-president, Dr. James R. Gorman; secretary-treasurer, Dr. R. D. Caldwell, all of Lynchburg.

It was decided to hold meetings bi-monthly in the future instead of monthly, as in the past.

**The Association of the Seaboard Air Line Railway Surgeons**

Held its nineteenth annual meeting at Pinehurst, N. C., December 11 and 12, Dr. Vernon A. Brooks, Portsmouth, Va., presiding. The meeting was most enjoyable in every way and a number of interesting papers were read. Havana, Cuba, was selected as the place for the next meeting and the following officers were elected: President, Dr. R. B. Epting, Greenwood, S. C.; vice-presidents, Drs. J. E. Johnson, Elberton, Ga.; H. H. Bass, Henderson, N. C., and T. M. McDuffee, Manatee, Fla.;

secretary-treasurer, Dr. J. W. Palmer, Ailey, Ga. (re-elected). Drs. W. S. Manning, Jacksonville Fla., and G. S. Watkins, Oxford, N. C., were elected members of the executive committee.

The annual banquet was held at Carolina Hotel, chief surgeon, Dr. Joseph M. Burke, Petersburg, Va., acting as toastmaster. On the night of the 12th, the surgeons and members of their families left for Norfolk, Va., and on the following day enjoyed an oyster roast at Cape Henry. That evening they went by boat up the Bay to Baltimore, and, after spending the day there, returned to Norfolk by boat, from which place they went to their homes. All entertainments and trips were given complimentary as a courtesy from the officials of the Railway.

# The Truth About Medicine

During November, the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Nonofficial Remedies:

Lederle Antitoxin Laboratories:
Mercurialized Serum-Lederle for Intravenous Use.

Charles Leich and Company:
Sulfarsenol.

Mallinckrodt Chemical Works:
Barium Sulphate Pure—M. C. W.

H. A. Metz Laboratories:
Benzosol.

Parke, Davis and Company:
Silvol.

Arsenobenzol-Dermatological Research Laboratories and Arsphenamine-Dermatological Research Laboratories:
These products are now marketed by the Abbott Laboratories as Neoarsphenamine-D. R. L. and Arsphenamine-D. R. L. The Council has continued the acceptance for New and Nonofficial Remedies under these names.

## Propaganda for Reform.

Abram's "Oscilloclast."—This is a piece of electrical apparatus which is said to produce vibrations of varying rate. Its use is based on Abram's theory that "specific drugs possess a like vibratory rate as the diseases for which they are effective." Instead of using a drug one starts the "Oscilloclast" going, moves the indicators to the number corresponding to the vibration rate of the indicated drug and applies the instrument to the sufferer who, it is alleged, then gets the therapeutic action of the drug in question. The "Oscilloclast" is not for sale. It may be leased (for about two hundred dollars), on signing a contract that the instrument will not be opened. Within the past few months Abrams has been making bids for osteopathic patronage. The followers of the cult have not been slow to respond. The lure of the dollar and the bizarre is irresistible. Many of the lessees of the "Oscilloclast" are individuals who for years have lived in what may be called the twilight zone of professionalism, where it is difficult to distinguish between the visionary with a fad and the quack or near quack with a scheme. (Jour. A. M. A., November 4, 1922, p. 1626).

Caroid.—This is a preparation of papain (obtained from papaya). Caroid was first marketed by the American Ferment Co. and later by Mead Johnson and Co. For a considerable time the Council on Pharmacy and Chemistry had Caroid under consideration and in the end rejected the product on account of its variability. Although Caroid was found more active than other preparations of papain, examination showed that the claims for its digestive efficiency were exaggerated. Since the publication of the Council's report in 1914, Mead Johnson & Co. do not seem to have made any propaganda for Caroid. It is now being promoted by the American Ferment Co., but this firm has not requested a consideration of the product by the Council. (Jour. A. M. A., November 4, 1922, p. 1829.)

Habitual Use of Barbital.—The constant use of even small doses of barbital (veronal) affects the central nervous system. Those taking the drug habitually become much debilitated and seem less able to stand moderate doses. Death has occurred from a 3 gm. dose in addicts. In Great Britain barbital (veronal) has been classified as a poison. Many cases of poisoning occur from its indiscriminate use by the laity. (Jour. A. M. A., November 11, 1922, p. 1709).

The Pituitary Hormone.—So far the active principle of the pituitary gland has not been isolated. It is possible that the pituitary contains more than one physiologically potent constituent. Perhaps both pressor and depressor compounds are derivable from the gland structures. Abel and Rhuiller have prepared products from the infundibulum which have both vasomoter and oxytocic effects. These investigators believe that if the product is obtained in the pure state, it will be fifty times more active than histamin, and that there is but a single specific hormone in the infundibulum, and that this has both vasomotor and uterus-stimulating properties as well as a powerful effect on the kidneys. The hope of a speedy isolation of this pituitary hormone as a chemical entity is somewhat shattered by the fact that it is unstable in laboratory manipulations. (Journal A. M. A., November 18, 1922, p. 1770).

Commercial Vitamin Preparations.—No student of the subject of vitamins can fail to recognize the ridiculousness of recent attempts to supply alleged vitamin-bearing preparations as cure-alls. It is doubtful if any latent, not to say evident, avitaminosis is prevalent in this country. Nevertheless, preparations sold to supply this alleged need of vitamins should at least not be fradudent. E. P. Bailey, of the Connecticut Experiment Station, has determined the potency of some commercial vitamin preparations as compared with that of dried brewers' yeast. The report stated that apparently many manufacturers are not convinced of the efficiency of their vitamin preparations, and, therefore, have added various medicaments of established reputation in therapeutics for good measure and to ensure a reaction of some description. Bailey compared the potency of the products on the reasonable assumption that a preparation which in a 100 mg. dose does not exhibit the potency shown by 100 mg. of a good grade of dry brewers' yeast employed under comparable conditions does not justify a claim of superior therapeutic value as a source of water-soluble B vitamin. On this basis, nearly half of the advertised products failed. Others showed only inferior content of vitamin. A few of the products equalled good brewery yeast in potency and only two or three products among nearly two dozen examined showed any superiority of "concentration" over ordinary yeast. (Jour. A. M. A., November 25, 1922, p. 1846.)

# Virginia Medical Monthly

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# Editorial

## Insulin and Diabetes.

As pointed out in an editorial of the *British Medical Journal*, Saturday, November 4, 1922, the readers of Professor J. J. R. MacLeod's summary, published in that journal, beginning on page 833, on the specific treatment of diabetes, must be impressed with the thought that this work is dealing with a real scientific advance of immense importance. As is well known, previous attempts at the extraction from the pancreas of a hormone which enabled clinicians to control carbohydrate metabolism in man have been wanting in success and have fallen into disuse through sheer failure to produce results. From this fact alone, faith in the real endocrine control of the pancreas over carbohydrate metabolism has been based largely upon a long series of experiments in the hands of numerous workers, performed by extirpation and implantation of grafts of pancreas in animals.

As indicated in this editorial, the Toronto observations. "which were initiated by the brilliant enterprise and fresh enthusiasm of F. G. Banting and C. H. Best," have been expanded into a big team of collaborators working on various phases of the problem of the influence of the pancreatic hormone in carbohydrate metabolism. It seems quite certain, at least it may be reasonably anticipated as certain, that the following facts have been established, that: (1) a pancreatic hormone exists; (2) the islets of Langerhans produce it; (3) an extract of this principle of the islet is being made in a stable form; (4) the extract is capable, when injected in the body, of reducing sugar in the blood and, when used clinically in diabetes in man, tends to reduce blood sugar, urine-sugar, and acetone bodies. The possibilities of this remarkable series of observations are incalculable at this writing. The exploration of this new field of physiological thought offers the possibilities of the discovery of much that may redound to knowledge of diseases of metabolism and their management.

One can not read Dr. MacLeod's "guarded statement" of the physiological and therapeutic effects of insulin, without experiencing a quickening sense of enthusiasm, notwithstanding the affront such an emotion may inflict upon one's sense of scientific caution, due to be functioning always in all scientific minds. The writer begs to be forgiven if he oversteps the bounds of scientific caution when he says that it appears in these remarkable developments that the physiological laboratories of Toronto have given clinical medicine an agent for the alleviation and control of diabetes in man. The recent advances in the dietary management of diabetes and the introduction of insulin as an aid in the more complete metabolism of carbohydrates should give practitioners, with training in the management of this disease, with the aid of laboratory and hospital assistants, an unprecedented opportunity for more successful work in this field.

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The editor of the *British Medical Journal* proceeds in this wise: "The method of producing active solutions of 'insulin' and of gauging their activity would appear to call for much further investigation before any institution, scientific or commercial, could safely promise regular supplies of a satisfactory and uniform preparation." "Any wide extension of the treatment before such regular supplies can be guaranteed would involve real cruelty and possible danger to the sufferers, and impair the credit of the discovery with the public."

Again, he writes, "Under expert supervision, in clinics where diet and dosage can be accurately adjusted and effects controlled by regular skilled analysis, results of high promise

have been obtained in Canada and the United States." "It is imperative, moreover, that any such extension of the treatment beyond organized experimental clinics shall be made under conditions giving the strictest scientific control of the preparations supplied to the profession. The authorities of the University of Toronto, realizing this necessity, have taken steps to protect the process of manufacture."

### Preparation of Insulin.

Since the extract used by Banting and Best caused a certain degree of local irritation, it was found necessary to attempt to find a method by which it could be produced in less irritating form. Collip accomplished this by a method of fractional precipitation with alcohol and this method is essentially used now in production of insulin in larger amounts.

The next step in the procedure was the inauguration of a method for testing the potency and reliability of insulin as to dosage. This was done by finding that insulin was capable of lowering the percentage of blood sugar in normal rabbits. The rate and the degree of hypoglycemia depended on certain conditions, but finally it was "found to be satisfactory to consider as one unit the amount of insulin which, on subcutaneous injection, can lower the percentage of blood sugar to 0.045 within four hours, in a rabbit weighing about 2 Kg., from which food has been withheld for sixteen to twenty-four hours." (MacLeod). This was taken as a unit for the reason that it was found in these experiments, the rabbits displayed a "highly characteristic symptom, consisting of violent convulsion seizures with intervals of coma," when the blood sugar was lowered to this point. Concentration of insulin was made so that, for clinical experiments, 1 c.c. represented one unit. One unit of insulin is thought to metabolize two to three grams of carbohydrate. It acts apparently in the muscle tissue, although MacLeod states that it has not been possible so far to demonstrate that "insulin would accelerate the disappearance of glucose from incubated (Buchner) extracts of muscle."

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The preparation of insulin on the large scale is a story separate and apart from the foregoing comments, but the course of action chosen by the scientists, MacLeod and his associates, has been of such signal sort that a brief recital of the main facts should be made in this connection. Rarely, indeed, in the history of scientific medicine, have men proceeded, in the perfection and the distribution of a therapeutic agent of such distinctive significance and importance, with more exemplary scientific caution and spirit. Although it appeared that the "dream of ages" was, in great measure, about to be realized by the demonstration of the discovery of a practical hormone in extract form for the control of the percentage of sugar in the blood, yet these workers have taken every precaution against "an uncontrolled commercial exploitation of insulin, with the consequences of its improper use in general practice."

This was done in this way. The chief originators of the method, with highly commendable scientific spirit, applied for patents covering its production and propose to turn these patents over to the University of Toronto. The patents have been applied for in Canada, United States, Great Britain, and other countries. The University, through its committee composed of some of those who have participated in the investigation and some of its Board of Governors, has recommended that "licenses to approved manufacturers, to produce and sell it at a reasonable cost," be not "granted freely until every possible detail of the manufacture on a large scale of a preparation of known and constant potency" has been found.

So, it is evident that the profession and the public are to be protected from "a stampede," by a calm and careful group of scientific men who are determined that the scientific medicine shall not be reflected with a blot of commercialism in high places, over a product which so easily lends itself to such possibilities.

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MacLeod gives the following references, which will be of interest and which speak for themselves:

1. Lepine: Le diabete sucre, Paris, 1909, p. 54.
2. Von Mering and Minkowski: Archiv. f. Exp. Path. u. Pharm., 1889, xxxi, page 371.
3. Knowlton and Starling: Jour. Physiol., 1912, xlv, 146.
4. Murlin: Jour. Biol. Chem., 1913, xv., 365.
5. Kleiner: Ibid, 1919, xl., 153.
6. Scott, E. L.: Amer. Jour. Physiol., 1912, xxix., 3.
7. Clarke: Johns Hopkins Hosp. Reports, xviii, 229.

8. Banting and Best: Jour. Lab. and Clin. Med., 1922, vii, 251.
9. Banting and Best: Ibid, 1922, vii., No. 8.
10. Banting, Best and MacLeod: Proc. Amer. Physiol. Soc., Dec., 1921.
11. Banting, Best, Collip, MacLeod and Noble: Trans. Roy. Soc., Can., 1922, Vol. xvi., Sec. V.
12. Banting, Best, Collip, MacLeod and Noble: Amer. Jour. Physiol., 1922, lxii, 162.
13. Banting, Best, Collip, MacLeod and Noble: Ibid., 1922, lxiii.
14. Hepburn and Latchford: Ibid, 1922, lxii, 177.
15. Banting, Best, Collip, Campbell and Fletcher: Canad. Med. Assn. Jour., March, 1922.

## Good Roads! Good Roads!! Good Roads!!!

It is hoped that, by the time this reaches our readers, the legislature of Virginia will be in session, for the enactment of necessary laws by which funds may be secured for the State-wide building of permanent hard-surface roads throughout this old Commonwealth.

In the work of this legislature every doctor is vitally interested. There is work for the doctors of the State, in this connection, if the best results are desired. Every doctor in the Old Dominion should bring every proper pressure to bear upon the governor and the legislators in order to secure, in the near future, needed legislation for good roads. Virginia and Virginia people have suffered from the handicap of poor roads long enough. Virginia doctors, in particular, have sacrificed time, physical effort and body long enough on "impossible roads." The time has come to do something that will afford relief.

The automobile-age of transportation is established. That people or State that does not provide adequate roads for the operation of this means of communication and transportation must pay the inconceivable costly tax of retrogression. Not to go forward with sister States is to go backward. The State's honorable past is fine; the place that our forefathers have made in the history of the nation is fine; the foresight and aggression of the old time Virginians is a great heritage. This, today, we enjoy, and this heritage gives us a sense of self-sufficiency and satisfaction, but, if we of today are to keep apace even with the best progress of sister States, certainly if we are to secure for our children and leave for succeeding generations one of the prime necessities of modern life, we must settle now upon a plan for the accomplishment of this new and needed public necessity—Good Roads in Virginia.

Imagine the benefits, if you can, to this old Commonwealth, twenty-five years from now, if the highways of this State were hard-surfaced *now*. In winter and summer, rain and snow, at night or day, automobiles can be used over our State roads to transport the people from homes to churches, to schools, to neighbors, to cities. No matter what the weather condition, the products of the farms can be conveyed by automobile to the market places. The sick and injured can be reached by the physicians with reasonable promptness and without undue fatigue. The physicians in rural sections, as in the towns and cities, may, at all seasons, use automobile conveyances in the discharge of professional duties.

Under such improved system of highways there will be no danger of any such question as a scarcity of doctors. Rural doctors, with easy access to larger territory, among a clientele of a people of greater wealth, will be able to discharge their professional duties with greater ease, in a shorter time, and derive an increased remuneration.

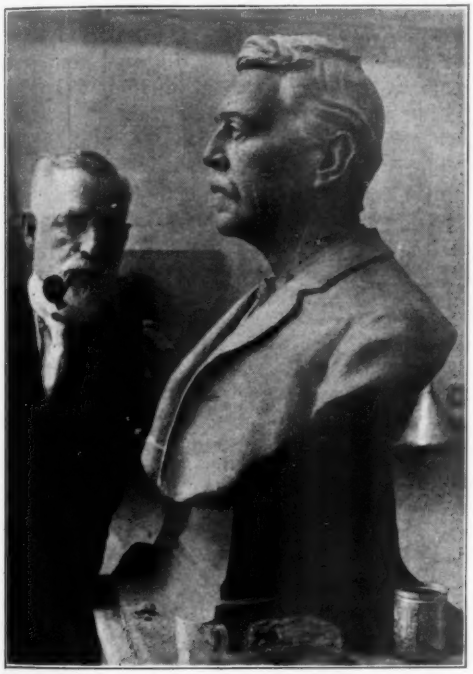
Such a life in the towns and country sections in our State will enable physicians to do what city doctors are now beginning to enjoy—other things than all the day long plying the duties of one's calling. Rural physicians and those in small towns, in such conditions, may enjoy the freedom a few hours each day for interests of a small farm, or literary pursuits, or pleasurable diversions.

Now, doctors of Virginia, come forward in this important hour and assert your influence in behalf of Good Roads. The practical application of this appeal is to make every proper effort possible to induce representatives of the legislature to enact laws by which Virginia can secure good hard-surface roads at once.

## Bust of Dr. McGuire Presented College.

On December 20th, a bronze bust of Dr. Hunter Holmes McGuire, the most distinguished surgeon of his time in the South, was presented by his family to the Medical College of Virginia. This bust was made by Dr. John W. Brodnax, associate professor of anatomy at the college and was placed in a niche on the landing opposite the front door of the Medical College, thus making the bust the most conspicuous object in the vestibule of the college building. No more appropriate location could have been chosen for the bust

of a man of whom all Virginia is justly proud and whose life may serve as an ideal for any young man entering upon the study of medicine. Dr. McGuire was renowned alike in war and in peace. He first came into prominence as surgeon in charge of the Army of Northern Virginia, during the War Between the States, and later climbed the ladder of fame until he had attained all the honors with which his profession could endow him. Dr. McGuire was founder and first president of the University College of Medicine, later amalgamated with the Medical College of Virginia, and it was in the building taken over from the former school that the bust was placed.



Hunter Holmes McGuire, M. D.,
By Dr. John W. Brodnax.

The ceremonies of presentation were most impressive, each vying with the other in his tribute to Dr. McGuire and to the sculptor—our own Dr. John W. Brodnax. The speech of presentation was made by Dr. W. Lowndes Peple, professor of clinical surgery at the college, and was received in behalf of the college by Dr. Beverley R. Tucker, professor of nervous and mental diseases.

The union of the anatomist and the artist in one person is very rare. One may search the roll of thousands of physicians and rare indeed is the artist, in drawing, painting and sculpture found. In England, Bell, Maclise, Holden, and Goodloe, and in America, Keen, Spitka and McClellan may be cited as anatomists of eminence and accomplished artists besides. While they were known to the medical profession as anatomists and physicians, they were artists as well. They made their art serve them in scientific work.

Anatomy owes much to Art; anatomy has ever been the basic study for the painter and sculptor of human form. The artist's talent of expression in drawing, in painting, and in sculpture, of the human body, must find its highest values only after the study of anatomy. So, through the history of art the relation of anatomical study and artistic expression of the human body has been very close. As artists who would develop rare perfection in the delineation of the body in art must know something of anatomy, the anatomist who would teach in the highest type anatomy is greatly advantaged if, in his soul, he is an artist who can draw and paint his dissections and demonstrations in anatomy.

So it is with no inconsiderable degree of pride that we draw attention to this rare artistic quality in one of Virginia's distinguished anatomists, who has turned for the moment from his drawings and dissections in the class room to give us in bronze the bust of a distinguished Virginia surgeon.

John Wilkins Brodnax graduated in medicine at the Medical College of Virginia in 1892. Since his graduation, he has been an active and devoted student of anatomy and anatomical studies. Before the amalgamation of the University College of Medicine with the Medical College of Virginia, Dr. Brodnax taught anatomy in the former institution; since the amalgamation, he has held the chair of Associate Professor of Anatomy in the Medical College of Virginia. For practically a quarter of a century, Dr. Brodnax has been devoting himself to the teaching of anatomy. During this time, through his accurate knowledge of anatomy, his skill as teacher, and his wonderful devotion to his work in the lecture room and in the dissecting hall, he has given a host of medical students from this and adjoining states the ad-

vantages of an unusual sort in the study of anatomy. As some one has said, "It is obvious that he who flashes an idea clearly and pleasantly by a stroke upon the blackboard will, other things being equal, best hold the attention of his audience and send them away with the best mental picture of the subject of his discourse." This is eminently true of Dr. Brodnax in his anatomy teaching.

Dr. Brodnax, long a member of the Association of American Anatomists, is gifted far above the average teacher in possessing unusual powers as an artist and a worker in sculpture. For years it has been known among his friends that he possessed these unusual gifts. His great modesty and the exactions of his long hours of teaching, demonstrations and dissections, have combined to keep far in the background the exercise of his art.

The occasion of the placing of the bust of Dr. Hunter Holmes McGuire in the college building served to draw from Dr. Brodnax this expression of his skill. The reader may judge of its high quality. The devotion and admiration which Dr. Brodnax bore his subject, Dr. McGuire, has but given him the call to indulge this highly artistic quality and has drawn him, for the all too brief moment, from his life's work in the anatomical halls, to give us the splendid bust of a great Virginia doctor.

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Dr. Brodnax is a scion of an old Virginia family. Brodnax is a name that has come down from early colonial times in America. The Brodnax family is an old Kentish one, which can be traced back farther than the fifteenth century, even into the earliest English times.

Major John Brodnax, the American ancestor of Dr. John Wilkins Brodnax, was the seventh in descent from Robert Brodnax of Burmarsh. This ancestor fought in the civil wars of England, holding the rank of major in the Royalist army. He came to Virginia with a host of other cavaliers who had followed the ill fortune of Charles. He settled in York County probably about 1649, and died there in 1657. From this immigrant ancestor the family of Brodnax has come down in Virginia history with many marks of talent and intellectual attainments worthy of long English ancestry.

Dr. John Wilkins Brodnax, the subject of the appreciation, was the son of Dr. Robert Walker and Cornelia (Batte) Brodnax, and was born in Petersburg, Va., March 21, 1864. He was educated at the public schools and at McGuire's University School of Richmond. He graduated in medicine at the Medical College of Virginia in 1892. Prior to undertaking the study of medicine, he studied art under the noted sculptor, Edward V. Valentine, of Richmond, and the Arts Students League of New York. He has been a resident of Richmond since youth.

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# News Notes

**A State Health Workers' Conference,**

Which was in reality a kind of institute for those working under the auspices of the State Health Department, held a four days' session in Richmond, December 27-30, inclusive. Dr. Ennion G. Williams, State Health Commissioner, was presiding officer, and had joint meetings in the morning and sectional meetings in the afternoon. More than 100 health workers were registered in attendance. Public health nurses held a meeting in conjunction with that of the health officers.

Many points of practical interest were discussed and high tribute was paid by the visitors to the excellent work being done by Dr. Williams and his co-workers in Virginia. Out-of-State visitors were Surgeon-General Hugh S. Cumming, of the U. S. Public Health Service; Dr. James A. Hayne, State Health Commissioner of South Carolina; Dr. W. F. Draper, Assistant Surgeon-General of the U. S. Public Health Service, and former director of rural sanitation of the Virginia Health Department, and Miss Havey, director of public health nursing in Red Cross work. All of these gave talks which added much to the interest of the conference.

In the course of the conference, Dr. Williams paid tribute to the memory of Louis Pasteur, the noted French scientist, father of bacteriology, founder of physio-chemistry and inventor of bio-therapeutics, the one hundredth anniversary of whose birth came on December 27th—the first day of the conference. Exercises commemorating the birth of Pasteur were also held in various cities in this and other countries.

**The Tri-State Association of the Carolinas and Virginia**

Will hold its twenty-fifth annual session in High Point, North Carolina, on February 21-22, under the presidency of Dr. S. S. Gale, of Roanoke.

A comprehensive symposium dealing with almost every feature of the cancer problem will be brought to a close by a discussion by Dr. James B. Murphy, of the Rockefeller Institute. Dr. Murphy has devoted many years of study to the cancer situation, and he is able to say the last known word about cancer.

Another symposium will be devoted to pneumonia, and a number of brief papers will discuss the problem in its various aspects. This symposium will be closed by a discussion by Dr. Russell Cecil, of the Rockefeller Institute. He is more familiar than any one else in the world with the different types of pneumococci.

Dr. Henry A. Cotton, Superintendent of the great State Hospital at Trenton, New Jersey, has promised to present in the symposium on mental diseases a paper summarizing his work in the psychoses.

A number of other papers will make their appeal alike to the specialist and to the general practitioner. The secretary feels assured that the program of the approaching meeting will surpass in interest anything the Tri-State has presented for many years. Members who expect to attend the meeting should ask at once for reservations in the Sheraton Hotel, at High Point. Dr. D. A. Stanton is chairman of the committee of arrangements at High Point. He will be glad to answer inquiries, as will also the secretary of the Association, Dr. James K. Hall, Westbrook Sanatorium, Richmond, Va., and Dr. S. S. Gale, Roanoke, Va.

**Health Courses at University of Virginia.**

To meet the growing demand of the State for trained health officers, the Medical School of the University of Virginia is adding courses for the training of health officers and health workers. One course is open to medical graduates who may apply to the department of medicine for admission at any time for an intensive twelve-weeks' course, designed to fit the student to take charge of a county health unit and set him in the path of becoming a health officer. The other course is open to adults with the equivalent of a high school education, who, upon application to the department of medicine, will be given ten weeks of practical training to fit them for the position of sanitary inspector. Both courses are thoroughly practical. The student will be attached to the local health unit and will be called on to perform the usual duties falling to health workers in a small city or in a small community. In addition, if deemed advisable, special work may be assigned in the University Hospital or in one of the laboratories. There will be little or no class work and lectures, each student being treated more as an apprentice to the health officer. When the student satisfies the health officer, the University will recommend him to the State Board of Health, or to a town or county.

Other forms of public health instruction are being planned by the University and will be undertaken as soon as possible.

**Report on Administration of Maternity and Infancy Act.**

Miss Grace Abbott, chief of the Federal Children's Bureau, in her annual report to the Secretary of Labor, states that the maternal mortality for 1920 in the United States birth-registration area was the highest for all nations for which recent statistics are available, and that yearly statistics from 1915 to 1920 show an increase rather than a decrease in the American rate. Although the infant mortality rate has decreased, it is still higher than the rate in five other countries.

To date, forty-two states have accepted the terms of the Maternity and Infancy Act, twelve being by legislatures and the remaining thirty by governors, pending the next regular session of the legislatures. Porto Rico and Hawaii have expressed a desire for inclusion.

It may be of further interest to note that since 1912, when the Children's Bureau was established, the number of states having special divisions dealing with child health has increased from one to forty-six.

Reports showed that the work of both the Federal Board of Maternity and Infant Hygiene and the Children's Bureau are progressing satisfactorily.

**Medical Society Buys Home.**

The Fulton County Medical Society has

bought a home in Atlanta, Ga., the first floor of which has an auditorium with a seating capacity of 350. Four rooms are used as a library. The building is known as the Academy of Medicine. The upper floors will be rented to physicians as living quarters.

On the occasion of the opening of the new home, December 7th, Dr. J. Shelton Horsley, Richmond, by invitation, delivered an address on "The Relation of Biology to Surgery."

**The San Francisco Meeting.**

San Francisco and the California Medical Association are making extensive preparations for the entertainment in June of the American Medical Association. Dr. W. E. Musgrave has been made chairman of the local committee of arrangements and all communications, of whatever nature, should be addressed to the permanent headquarters of the committee, 806 Balboa Building, San Francisco.

**Married.**

Dr. William Dulaney Anderson, Chattanooga, Tenn., and Miss Rosalie Slaughter, daughter of the late Dr. Samuel G. Slaughter, of Lynchburg, Va., December 16. Dr. Anderson graduated from the University of Virginia in 1915, after which he served an internship at the University of Virginia hospital.

**Dr. and Mrs. Thos. Davis**

And son, of Lynchburg, Va., spent the holiday season with Mrs. Davis' parents in Richmond.

**Dr. Clifton M. Miller,**

Richmond, has been elected president of the Kiwanis Club of this city, for the present year.

**Dr. J. B. Mears,**

Of this state, who has for some time past been on the U. S. S. Arizona, with the rank of Commander, is now stationed at Naval Hospital, Mare Island, California.

**Dr. Claude M. Lee,**

A graduate of the University of Virginia, in the class of 1905, with his family, is visiting in Charlottesville, Va. Dr. Lee has been in China for sixteen years, where he is in charge of St. Andrew's Hospital, at Wusih, China. Mrs. Lee is a niece of Mr. W. R. Duke, a member of the Board of Visitors of the University and of Judge A. T. W. Duke, Jr., of Charlottesville. Dr. Lee expects to return to China with his family next July.

**Dr. E. V. Valz,**

Who has been medical commander at the Navy Yard in Charleston, S. C., for three years, in January began a tour of duty on board the battleship Arkansas. Dr. Valz has many friends in this section, as he graduated from the University of Virginia School of Medicine in 1903, and has since been a member of the Medical Society of Virginia.

**The Southern Surgical Association**

Held its annual meeting in Memphis, Tenn., the middle of December, under the presidency of Dr. C. Jeff Miller, of New Orleans. The scientific program was interesting and the entertainments added greatly to the enjoyment of those present. The subject of the treatment of goitre, whether by X-ray or surgery, received much discussion. A resolution was adopted which creates a senior membership in the Association. To be eligible to this, one shall have been an active member for twenty years and can only obtain it upon his own application. Senior members will be exempt from the payment of dues but will be allowed the privilege of voting and holding office.

It was decided to hold the next meeting at White Sulphur Springs, W. Va., and the following officers were elected: President, Dr. James F. Mitchell, Washington, D. C.; vice-presidents, Drs. W. Battle Malone, Memphis, and Irvin Abell, Louisville, Ky.; secretary, Dr. Hubert A. Royster (re-elected), Raleigh, N. C.; treasurer, Dr. Urban Maes, New Orleans, La.

The following Virginia doctors were among those in attendance: Drs. Chas. R. Robins and H. S. MacLean, Richmond; Hugh H. Trout, Roanoke; R. P. Bell, Staunton; and Southgate Leigh, Norfolk.

**Dr. Meade Edmunds,**

After a service of twelve months on the House Staff of the Manhattan Eye, Ear and Throat Hospital, New York City, has located in Terminal Building, Petersburg, Va., and will limit his work to the above named specialties.

**Dr. B. M. Baker,**

Norfolk, Va., after a year's absence from his

practice, has recovered his health and has taken up his work actively again.

**Dr. Charles L. Bradshaw,**

Until recently of Osaka, Va., is now at Crownsville State Hospital, Crownsville, Md.

**Dr. John S. Lawrence**

Has moved from Norfolk, Va., to University, Va., where he is associate professor of Biochemistry at the University of Virginia.

**Dr. and Mrs. George A. Stover,**

South Boston, Va., announce the birth of a daughter, Elizabeth McNair, on December 27, 1922.

**Dr. Josiah Leake,**

Churchland, Va., visited relatives in Ashland, Va., during the holidays.

**Memory of Former Virginian Honored.**

Honor was recently paid the memory of the late Dr. John Herbert Claiborne, formerly of Petersburg, Va., and later of New York City, by the members of the "Virginians," an organization composed of former residents of Virginia now living in New York. Dr. Claiborne, who was well known in this State and a member of the Medical Society of Virginia, died in New York several months ago. He was a graduate of the University of Virginia, president of the University of Virginia Alumni Association in New York, and a former governor of the "Virginians." Resolutions were passed commemorating his work as a prominent specialist of New York City, and for his devotion and interest in all those whom he served as a physician, for his efficient services during the Spanish-American and World Wars, and for the great work he had done in advancing the interests and development of the "Virginians."

**Dr. Charles Sager,**

After spending several months with relatives in Woodstock, Va., in December left for Charleston, W. Va., where he will practice medicine.

**Dr. and Mrs. Fletcher J. Wright**

And sons, of Petersburg, Va., visited relatives in Blackstone, Va., during the holidays.

**The Richmond Dental Society,**

At its annual meeting in December, elected Dr. R. C. Walden, president; Dr. John Bell Williams, vice-president, and Dr. L. S. Hoover, secretary-treasurer.

**Dr. and Mrs. R. H. Woolling,**

Pulaski, Va., spent the Christmas holidays at the doctor's old home in Fluvanna County, Va.

**Provisional Birth and Mortality Figures for 1922.**

The Department of Commerce announces that provisional figures compiled by the Bureau of Census, for the first six months of 1922, indicate lower birth rates and higher death rates than for the corresponding six months of 1921. The highest birth rate for the period mentioned above is shown for North Carolina and the lowest for Vermont; the highest mortality rate for the same period is shown for Maine and the lowest for Idaho.

**Influenza Again in Virginia.**

Many cases of influenza are being reported throughout Virginia, though we are advised by the State Health Department that it is not so fatal as the epidemics of several years ago. Influenza appears to be coming from the South but it is expected its prevalence in Virginia will be of short duration.

**Dr. A. deT. Valk,**

Winston-Salem, N. C., has been elected president of the Eighth District of North Carolina Medical Society.

**Baptist Hospital for Hot Springs, Ark.**

A bill has been introduced in the U. S. Senate and referred to the Committee on Public Lands and Surveys, authorizing the Secretary of the Interior to turn over to the Baptist National Hospital Association a site of land not containing more than six acres in the Hot Springs National Park, to be used as a hospital, a suitable building to be erected by the Association.

**The Second International Conference on Standardization of Serums and Serological Tests**

Was held under the auspices of the League of Nations, November 20-26, 1922, at the Pasteur Institute in Paris. Despite the many points of view, the practical results from the free discussion were most encouraging to those who attended. Naturally, progress toward international standardization of the serums and

tests is slow, because of differences in methods used in the various countries but, for this reason, the importance and practical value of this standardizing is all the more apparent.

**Dr. A. G. Thurman,**

Formerly of Goodview, Va., is now located at Appomattox, Va.

**Dr. A. G. Vaden,**

Recently of Temperanceville, Va., is now located at Townsend, Va.

**Dr. Dean B. Cole**

Is at his home in Richmond, Va., after several months at Trudeau, N. Y. He will return to Trudeau in the Spring, but expects to be in Richmond permanently in the Fall.

**Dr. B. R. Caldwell,**

Who has been stationed with the Army Supply Base, in Norfolk, Va., is now at Ft. Bayard, N. Mex.

**Dr. A. M. Byrd,**

Who has recently made his home at Warm Springs, Va., is back at work again after being in ill health for three and a half years, and is associated with Dr. W. R. Williams, at Richlands, Va.

**University of Maryland Celebrates Founders' Day.**

Medical alumni of the University of Maryland, Baltimore, on December 18, celebrated their one hundred and fiftieth anniversary with a banquet at the Rennert Hotel, Baltimore.

**T. B. Bed to be Supported by Lions Club.**

Beginning January 1, 1923, the Lions Club of Roanoke, Va., will support a free bed at Catawba Sanatorium, Va., for the care of tubercular patients. This will be available for a patient from Roanoke City or Roanoke County.

May not this act as "a hint to the wise" for some of the other civic organizations scattered through our Commonwealth?

**Dr. J. N. Hurty,**

Of Indianapolis, who recently resigned as State Health Commissioner of Indiana, has been elected to the Indiana State Legislature.

**Hygeia,**

A medical magazine for lay readers, will shortly make its appearance. This was authorized by the 1922 House of Delegates and will be published monthly by the Board of Trustees of the A. M. A. It will be devoted to the development of individual and community health, based on the experience of generations of medical scientists in sickness prevention. The world's best writers, both scientific and popular, are to contribute to this magazine. The American Medical Association, 535 N. Dearborn Street, Chicago, Ill., will furnish further information about this.

**1922 Report of U. S. Public Health Service.**

The report of the operations of the U. S. Public Health Service, for the fiscal year ending June 30, 1922, will hold the attention of any one interested in public health work and its progress. The activities reported and the work accomplished show that this Service is measuring up to the high mark set for it.

**Rockfeller Foundation Will Help A N. C. Medical College.**

The Rockefeller Foundation has made a proposal to furnish $4,000,000 towards the establishment of the proposed State medical college in North Carolina. The stipulation is made that the college must be in some city large enough to provide aid for the college, especially in the way of patients, though no particular city is mentioned.

**The Annual Report of the Surgeon General, U. S. Navy,**

For the year 1922, compares most favorably with reports of previous years. Figures showed that health conditions in the Navy were better than since 1917. The work done by the personnel was of a high order. The fact is brought out that the medical corps contains only 769 commissioned officers—a number insufficient to maintain the desired efficiency of the medical department—and some steps should be taken to secure properly qualified physicians for the Service.

**Dr. Paul W. Howle,**

Richmond, Va., has been appointed physician to the city jail, succeeding Dr. William S. Gordon, who resigned after a service of nearly a quarter of a century.

**Dr. G. G. Rhudy**

Has moved from Wytheville, Va., to Blue-

field, W. Va., and opened officers in the Coal and Coke Building, on Federal Street. He will continue to limit his work to diseases of the eye, ear, nose and throat.

**Russian Doctors in Need.**

Dr. Haigh, a member of the Health Committee of the League of Nations, and health expert attached to the Nansen Organization, states that medical and health institutions in many parts of Russia are in a serious condition. The hospitals lack everything for their good working and the medical staff, badly equipped, are even suffering from hunger, which makes the struggle more desperate. He states that there is urgent necessity for providing them with relief.

**Dr. S. W. Budd,**

Of this city, has been chosen pathologist at Retreat for the Sick, Richmond, to fill the vacancy caused by the death of Dr. E. G. Hopkins.

**Dr. J. W. Williams,**

Formerly of Richmond, but who has for several years past made his home near Louisa, Va., is now located at Kents Store, Va.

**The Southern Gastro-Enterological Association,**

Meeting conjointly with the Southern Medical Association in Chattanooga, elected Dr. Julius Friedenwald, Baltimore, president, and Dr. John B. Fitts, Atlanta, Ga., secretary.

**The Southern Association of Anesthetists,**

Also meeting conjointly with the Southern Medical Association, elected Dr. Ansel M. Caine, New Orleans, La., president, and Dr. W. Hamilton Long, Louisville, Ky., secretary.

**The Southern States' Association of Railway Surgeons,**

An auxiliary of the Southern Medical Association, at their recent meeting in Chattanooga, elected Dr. W. W. Harper, Selma, Ala., president; Dr. S. S. Gale, Roanoke, Va., vice-president, and Dr. J. W. Palmer, Ailey, Ga., secretary.

**The Southern Hospital Association,**

Another auxiliary of the Southern Medical Association, elected Dr. Stewart R. Roberts, of Atlanta, Ga., president, and Dr. J. B. Franklin, of Dallas, Texas, secretary.

**Women Physicians of the Southern Medical Association,**

At their annual meeting in Chattanooga, elected Dr. Elizabeth Kane, Memphis, Tenn., president, and Dr. Josephine D. Hunt, Lexington, Ky., secretary-treasurer.

**Dr. Sidney Trattner**

Returned to his home in Richmond, the middle of January, after a visit to relatives in New York City.

**Dr. Everett S. Barr**

Has been appointed to the position of Medical Director, Bureau of Hospitals, in charge of the Hospital for Mental Diseases, Byberry and 34th and Pine Streets, Philadelphia. He has filled the position provisionally since last November, when Dr. S. W. Hamilton resigned. Dr. Barr is a graduate of the Medical College of Virginia, Richmond, in 1916, after which he served an internship at Hygeia Hospital, this city. During the World War, he saw active service as a neuro-psychiatrist, both in this country and overseas.

The Philadelphia *Journal of Commerce*, in noting this appointment, is exceedingly complimentary of Dr. Barr. He has many friends in Virginia who will be interested in his success.

## Obituary

**Dr. Erasmus Guy Hopkins,**

One of the best known pathologists in this section, died at his residence at Glen Allen, Va., December 19, after an illness of seven months with cancer. He was born in Fredericksburg, Va., in April, 1877, and, upon completion of his academic education, studied medicine at the former University College of Medicine, Richmond, from which he graduated in 1899. He was a house surgeon at St. Luke's Hospital, this city, for one year. He had been an active member of the Medical Society of Virginia since 1900.

Dr. Hopkins was for a number of years professor of clinical pathology in the University College of Medicine and later in the Medical College of Virginia. By his unfailing courtesy and charm of manner, he had endeared to himself a host of friends. During the World War, he served with Base Hospital

45, and organized the pathological department of the unit. He served with such ability that he was later appointed consulting pathologist for a group of hospitals at Toul, comprising some 20,000 beds.

Dr. Hopkins is survived by his wife, who was formerly Miss Pauline Gary.

**Dr. Edward A. Craighill,**

An honorary member of the Medical Society of Virginia, died at his home in Lynchburg, Va., January 2, aged 82 years. He was a native of Charles Town, W. Va., but had lived in Lynchburg for about 65 years. He was a graduate in medicine from the University of Pennsylvania in 1861, shortly thereafter entering the Confederate army as a surgeon. Upon termination of his service in 1865 he had the rank of major.

Dr. Craighill had been a thirty-third degree Mason since 1877. He was for a number of years president of the Board of Aldermen of Lynchburg, a former member of the board of Central State Hospital, Petersburg, and an ex-president of the Virginia Pharmaceutical Society. He was engaged in retail drug business in Lynchburg until about ten years ago. His widow and two sisters survive him.

**Dr. Armistead Green Taylor,**

One of the most prominent and best loved citizens of Amelia Conty, Va., died at his home near Mattoax, January 2, at the age of 81 years. The interment was made in Hollywood Cemetery, Richmond. He was a student at the University of Virginia, when the War Between the States broke out. However, he at once joined the Confederate army and served with distinction throughout its course. Upon the termination of the war, he took up the study of medicine at the Medical College of Virginia, from which he graduated in 1867. He then returned to his native county and had practiced there continuously since. He is survived by two sons, one of them Dr. Lewis Harvie Taylor, of Washington, D. C.

**Dr. Claude Dalby Kellam,**

Of Norfolk, Va., died at his home in that city, December 15, after an illness of several weeks. He was forty-one years of age and studied medicine at the former University College of Medicine, Richmond, from which he graduated in 1903. He became a member of the Medical Society of Virginia in 1904. He was especially interested in neurological work and limited his practice largely to this branch of medicine. He is survived by his wife, formerly Miss Inez Childress, of Petersburg, Va.

**Dr. Samuel Stewart Snarr,**

Of Mt. Jackson, Va., died December 12, at the age of 42 years. He was a graduate from the Maryland Medical College, of Baltimore, in 1909, and had been a member of the Medical Society of Virginia since 1915.

**Dr. Meade Randolph Edmunds,**

Formerly a member of the Medical Society of Virginia, died in Washington, D. C., November 30. His death was due to accidental asphyxiation. He was 40 years of age and had graduated in medicine from the Department of Medicine of George Washington University, Washington, D. C., in 1906.

**Dr. Forest Alphonso Carpenter,**

Of Statesville, N. C., died from cerebral hemorrhage, at Battle Creek Sanitarium, Battle Creek, Mich., December 2. He was 43 years of age and had graduated from the North Carolina Medical College, Charlotte, in 1906. Dr. Carpenter specialized in eye, ear, nose and throat diseases, and was part owner of the Carpenter-Davis Hospital, in Statesville.

**Dr. Frank Arnold Fox,**

Greenville, Tenn., was found dead in his automobile, November 26, with a bullet wound through his heart. He was 26 years of age and had graduated in medicine from the University of Virginia in 1921, at which time he was appointed to an internship at Charity Hospital, New Orleans.

**Dr. Luther Sexton,**

Of New Orleans, La., who frequently contributed to this journal, died November 30, after a long illness. He was 62 years of age and a graduate in medicine from Tulane University of Louisiana in 1881. He was assistant professor of clinical minor surgery and for twenty-five years lecturer on surgery at this school. He was at one time a member of the Louisiana State Board of Health.